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TABLE OF CONTENTS 392.
BUYERS' DIRECTORY 52.

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INDIA RUBBER WORLD

CAOUTCHOUC — HEVEA BRASILIENSIS — GUTTA-PERCHA — ISONANDRA GUTTA

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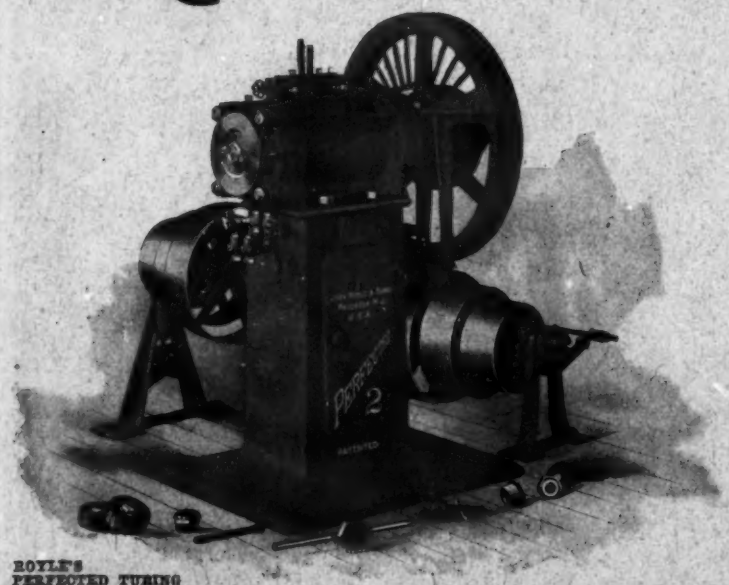

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TABLE OF CONTENTS ON LAST PAGE READING MATTER.

THE NEW RUBBER FACTORIES.

THE term "rubber factory" is rapidly coming into a new use, which is interesting as indicating a new development in connection with rubber interests. Similarly a new class of "rubber machinery" has lately come into existence. We refer to the plant used, under modern conditions, in the preparation of crude rubber for the market, in substitution for the hand labor which formerly embraced all the processes applied to rubber before it reached the mills where commercial rubber goods are fabricated. The new rubber factory and the new rubber machinery in no sense give to the raw material any of the properties of being "manufactured," in the ordinary sense of the word—they only serve to prepare the raw material in a better manner and more economically than under the old regime.

A newspaper that reaches us from the Far East prints as a matter of course an account of the inauguration of a new "rubber factory" in its locality, attended by a certain amount of ceremony, in the presence of the leading citizens and their families, followed by refreshments and speechmaking. The compliment was paid to some one of being selected to start the 20 HP. engine which is to supply the power for the various washers, presses, and the like, used for quickly and cheaply converting into merchantable rubber the latex gathered from the planted rubber trees surrounding the factory. The extent of this particular enterprise is indicated by the mention of the 800 employés of the estate who were present at the starting of the factory.

We have devoted considerable space already to describing and illustrating some extensive rubber factories in Mexico, involving much ingenious and expensive machinery, and used for extracting rubber from the guayule plant—a now valuable source of rubber which was not commercially available before the invention of these labor saving devices. The promoters of the new Mexican enterprise are becoming interested in the rubber resources of Central Africa, with the idea of introducing the new mechanical processes there. It need surprise no one to hear, within twenty years from the date of Stanley's announcement of the discovery of vast rubber resources on the upper Congo, of the operation of large rubber factories there, giving employment to natives of a type which, in Stanley's time, was devoted mainly to the practice of cannibalism.

The rubber goods manufacturer to-day who wishes cotton fabrics for use in his goods buys the product of certain mills, strictly according to specifications. He may similarly, to a certain extent, buy crude rubber from factories, according to specifications, and it perhaps is not too much to predict that ultimately little rubber will be bought in any other way.

BELGIUM AND THE CONGO.

THE question of the annexation of the Congo Free State appears now to be under serious consideration by Belgium, and it is probable that this great African rubber region will cease soon to be the private possession of Leopold. It is hardly supposable, however, that he is to make a free gift of it to his country, or that he will retire wholly from the rubber trade. No doubt the agitation over Leopold's administration of Congo affairs has been prompted in part by the monopoly in trading that has prevailed there, and the Congo as a Belgian colony might afford a freer field to outsiders than now exists.

But what would be the real effect upon the "red rubber" business? Will any change of political control render the natives more willing collectors of rubber? The English and American friends of what they term Leopold's slaves complain that the latter are forced against their will to work, and it would be strange if his abdication as ruler should make the natives more industrious. Or it is alleged that the large profits of the trading companies are due to the meager payment made for the rubber. Would traders of other nationalities be so indifferent to profits as to sacrifice dividends to making the Congolese rich?

The Congo question is interesting from many points of view, but any change of control is likely to be

theoretical rather than practical, for a good while to come, so far as its effect upon the rubber situation is concerned.

A LIBEL ON RUBBER TIRES.

ONE hears now and then a suggestion, for instance, that manufacturers are not producing the best pneumatic tires possible, preferring rather not to have their products last too long, as this would interfere with the sale of more goods. To hear such a suggestion from an outsider is not so surprising, for there always have been people ready to take the most unfavorable view of any situation or question imaginable, but this expression in regard to tires may be heard even in rubber trade circles, which is surprising.

There are innumerable reasons why the majority of tire manufacturers should endeavor to make the best tires possible. First, it is the only honest course; honesty is essential to building up a permanent and growing business, and we take it that the makers of rubber tires, as a class, are as desirous of a lasting success as any other line of manufacturers.

It would be particularly foolish to turn out inferior automobile tires, because the risks involved in the use of poor tires are so great, and the identity of a tire maker usually so clear, that the reputation of a manufacturer in this line is in constant danger if he should sell products below the standard. It is not even safe to sell rotten rubber bands or hot water bags that will not hold water, but several lives may be at risk every time an inferior tire is used, and a fatality from such a cause may be advertised throughout the world.

On the contrary, there are special reasons, apart from those suggested above, why rubber men should make the best tires possible. The financial rewards possible are higher than in most lines of rubber manufacture. A man who may be carrying hundreds of thousands in life insurance, who is in the habit of paying for the best of everything, not questioning the price of an automobile, would hardly object to any figure named as the cost of a set of tires. Here is a most exceptional field for the rubber man to distinguish himself in, in turning out the best goods that he and his working staff are capable of producing.

So much for theory. What is the practice? In the case of every widely advertised automobile event the names of the makers of the tires used are given the utmost publicity—by the makers themselves. Rubber manufacturers exert themselves to the utmost, regardless of cost, to turn out tires that shall in each case excel any competing product. They have contributed in no small degree to the cost of automobile competitions, and these contests, on the other hand, have done much for the tire industry in pointing out to makers wherein their products could be improved.

We are not ready to believe that any tire maker on the globe is conducting his business on the principle that it is better to sell two poor tires than one good one, or that inferior tires are purposely produced in order to lessen the intervals between sales. If proofs of such practice are available in any quarter they are desired in this office and will receive careful and impartial investigation.

We have heard somewhat similar criticisms of the rubber footwear trade. About once in so often one sees in the newspapers the suggestion that rubber shoes do not begin to have as much rubber in them as formerly. Any such idea is clearly refuted by the unmistakable evidence at hand as to the amount and the quality of the crude rubber bought and used by the rubber shoe industry, and this at prices two and three times as high as the cost of raw material in the good old times.

THE GOOD OLD WORD "RUBBER."

THE name "rubber" as a designation for a certain material with which our readers are presumed to be familiar may be without high scientific warrant, but it has the merit of priority among English speaking peoples, and this fact alone has led to its use becoming more widespread than "caoutchouc" or any other term, whether more scientific or otherwise. The English designation "rubber," as our readers know, referred to a rubber-out of pencil marks before any one thought of the word "eraser," and while some other uses of the elastic material have become more extensive since Priestley's time, the name sticks; it is fairly well understood, it serves its purpose, it is easy to write and speak, and the average man is too busy to consider a new name from any such consideration as that it may be more accurate or more fully descriptive.

The French designation "caoutchouc," based upon a native Indian name up the Amazon, is older. And the Germans to a degree have borrowed the French name, but they also use "gummi" to a great extent. To-day "caoutchouc" is nowhere a word in common use in a rubber producing region except the limited areas under French or German control, and then only by supervisors and not by native workers. The word is in use in French rubber mills and to a slighter extent in the German. Compared with this usage the universal adoption of "rubber" wherever English speaking peoples have to do with the production or consumption of the material, gives this work a vastly greater vogue.

We notice that Continental firms introducing their products into English communities adapt the names of their firms to English practice by taking up the word "rubber," while English firms trading abroad are less apt to follow a corresponding course. Englishmen have been first to introduce rubber goods in many parts of the world, as later they have been first to establish rubber planting on a practical basis, and the persistence of the names of the English (including American) companies alone seems likely to render the word "rubber" ultimately the most widely used term.

We notice that our able Hollandish contemporary, *De Indische Mercuur,* is running an admirably compiled department of rubber intelligence under the heading "Rubber Scraps," and on looking through the matter the word "rubber" appears as frequently as "caoutchouc"—something which would not have been seen in a European journal a decade ago. It seems reasonable that the Selangor *Rubber* Co., for example, is more apt to be mentioned as growing "rubber" than "caoutchouc," even in a Dutch paper, and like illustrations may be multiplied indefinitely.

Why wait to adopt the word rubber universally?

A YOUNG MAN ADVERTISES in a New York newspaper that, having discovered the secret of perpetual motion, he is willing to take as a partner some one who will supply capital to put the same into effect. He ought to be able to find the man he wants among the class who put up money for exploiting "artificial rubber."

THEY MUST BE AN AGREEABLY SURPRISED LOT, the shareholders of the Consolidated Malay Rubber Estates, Limited, who recently received notice of a 10 per cent. dividend for their first year, though no dividend at all had been promised in the company's prospectus. The conservatism of that prospectus marks its authors as typical Britishers of the old school. The favorable result mentioned was due to the collection of about 3 pounds of rubber each from some 11,000 planted trees.

THE INSULATED WIRE INDUSTRY appears never to have developed so rapidly at any period as since the introduction of wireless telegraphy. The wireless systems undoubtedly have their uses, but we have failed to see them take advantage in any way of the opportunity offered by the interruption of the telegraphic service in the United States by the recent strike among the operators.

IF THERE SHOULD BE LONGER ANY DOUBT as to the civilizing influence of the Congo Free State, it should be set at rest by the statement which reaches us through an official channel that the *chefs de poste* are urging the natives to build themselves comfortable huts. We understand that under the old régime there was no one to urge such progressive measures upon the natives. It will be of interest to notice whether the use of rifles will be necessary to make this urging effective.

RUBBER IN THE "NOISELESS CITY."

FROM "HARPER'S WEEKLY" (NEW YORK).

SCIENCE proposes to eliminate city noises by a number of improvements, some of which are peculiar. In the first place, the rubber tire has proved the greatest single factor in forwarding the movement. The automobile and bicycle have revolutionized conditions in our cities and opened the way for further important gains. Thousands of tons of rubber are annually converted into tires, and their growing use for all sorts of vehicles is slowly reducing the noise of city traffic. The present crusade for the suppression of unnecessary noises proposes to have laws passed requiring rubber tires on every class of vehicles. Trucks equipped with flat, solid rubber tires make comparatively no noise as they roll across asphalt, macadam and wood-paved streets. Even when passing over rough cobblestone pavements the noise is reduced to a minimum.

The wear and tear of rubber tires on trucks and similar heavy vehicles is not so costly as one would suppose. A good pair of rubber tires will last nearly as long as iron tires if the streets are properly paved. The change in the pavement of our streets is thus an essential part of the movement. Asphalt makes the smoothest and easiest pavement, but it is not suited to heavy traffic. A substitute for this has been found in recent years in the wood block pavement. The lower part of Broadway and many side streets in New York have been paved with wooden blocks, and the elimination of the noise of traffic is one of the most powerful factors in favor of this pavement. Wooden blocks have been used in Paris for a number of years, and some of the most important streets and boulevards are thus paved. The blocks are laid on a cement foundation, with the grain running perpendicular to the traffic overhead, and the blocks are wedged so close together that they cannot split or crumble. So far the wearing qualities of the wooden blocks have proved satisfactory to all concerned.

With our busy streets and avenues paved with wooden blocks, and residential streets with asphalt the roar of traffic can be reduced more than 50 per cent. The new street pavement is thus the forerunner of the rubber tire for trucks and heavy vehicles. Rubber tires used on such pavements will last longer than steel tires used on cobblestones, and, *vice versa,* the wood blocks or asphalt pavements have their years of usefulness increased 20 per cent. by the universal adoption of rubber tires. The elimination of traffic noise thus works a double blessing, saving our ears and nerves and prolonging the life of usefulness of vehicular tires and street pavements.

But there is still one old offender left—one of the most hardened criminals in this line. The surface car and elevated train roar and scrape along like the rumbling of approaching artillery. How can this noise be eliminated? "By forcing the companies to live up to the law in not using flat wheels," some one says. That only partly solves the difficulty. Now science proposes to do away with the scraping of iron against iron. There are two methods proposed. One is to use rubber tires for the car wheels and the other is to coat the top of the rails with a composition which will not give forth any metallic sound when scraped by iron wheels. Rubber tires for car wheels are somewhat of novelties, but a long series of experiments has been made with them which shows that they will in the end be adopted. It is not natural rubber, but an artificial compound which is fastened to the rim of the wheels by a process of welding. The coating cannot be torn off and wears only a little faster than iron. If the top surface of the rails were coated with this same composition friction would be reduced to a minimum.

This means a complete change in the type of brake. Instead of the present flat brake, which clamps the rim of the wheel, a brake similar to that used in automobiles will be adopted. This will clamp on the axle or in sprockets, so that the wear and tear on the wheels will be reduced. Flat wheels will be avoided by gradual slackening of speed, and the friction of the rubber-coated rails and wheels will be of such a nature that the car can be brought to a standstill much quicker and easier than at present. There will be no skidding along the rails in wet weather owing to the tractive force of the new inventions. The same materials used for elevated trains would eliminate the noise overhead of wheels pounding iron rails and the terrifying squeaking caused by rounding curves. The modern brakes in surface cars are noisy and crude affairs. Compared with the noiseless brakes of the automobiles they are about a decade behind the times. The "noiseless city" of the future will therefore have all its vehicular traffic carried on rubber or rubber-like compositions.

THE new 5 per cent. gold loan of £650,000 [=$3,163,225], floated in London and Amsterdam, is for the purpose of completing the railway from Pará to Bragança. The length is 256 kilometers [=156 1-3 miles], of which 178 kilometers are already open for traffic. The bonds are secured by the export duties on rubber.

AMERICAN WASTE RUBBER TRADE.

THE growth of imports of waste rubber into the United States during the past 20 years has been a matter of common knowledge in the trade, particularly as detailed statistics regarding the same have been available in official statements of American commerce. It may be of interest, however, to have brought together a summary of such imports and of the declared import value from the year when waste rubber first figured separately in the customs returns. These details relate to fiscal years, ending June 30.

AMERICAN IMPORTS OF WASTE RUBBER.

YEAR.	Pounds.	Value.
1890-91	488,163	$19,448
1891-92	1,841,786	66,775
1892-93	910,543	25,633
1893-94	1,774,008	55,803
1894-95	2,032,563	63,112
1895-96	3,874,677	123,068
1896-97	3,653,945	113,722
1897-98	9,488,327	339,374
1898-99	10,513,604	462,044
1899-00	19,093,547	1,249,231
1900-01	15,235,236	988,316
1901-02	22,894,900	1,437,690
1902-03	24,659,394	1,516,137
1903-04	20,270,970	1,164,785
1904-05	15,575,214	953,439
1905-06	24,756,486	1,721,578
1906-07	29,335,193	2,608,987

In the first year for which figures are given above, slightly more than 50 per cent. of the waste imported came from Great Britain, 22 per cent. from Germany and 15 per cent. from Canada, with the rest scattering. In the fiscal year 1905-06, Great Britain contributed but 16 per cent. of the whole, Germany 21 per cent., Canada 15 per cent., Russia 32 per cent., and the remaining 16 per cent. mostly from Europe, including large quantities from France and Sweden.

* * *

THE exportation of reclaimed rubber has constituted an increasingly important feature of the customs returns for a number of years past, this product going to every country in which rubber factories exist, though recently rubber reclaiming has been carried on extensively abroad. More recently an export trade in waste rubber has also grown up, in larger quantities probably than some in the trade would suppose. Only values of waste rubber exports can be given, for five fiscal years, as follows:

AMERICAN EXPORTS OF WASTE RUBBER.

To—	1901-02.	1902-03.	1903-04.	1904-05.	1905-06.
Great Britain...	$172,757	$215,904	$272,021	$103,329	$195,846
Canada	143,276	129,216	195,792	41,507	52,747
Germany	16,688	19,425	44,696	10,532	28,017
France	7,775	13,932	6,495	12,081	23,588
All other.....	32,225	26,109	15,046	37,496	39,309
Total	$362,721	$404,586	$534,500	$204,945	$339,507

The figures for value of exports of rubber waste for the fiscal year 1906-07 are $548,695, showing that shipments of this class are not decreasing. Quantities are stated for the first time for this period—4,756,621 pounds. This is almost one-fifth as much as the quantity of imports for the same period.

* * *

IT has been considered possible, by some in the trade, that the returns of "rubber waste" exported might, for one reason or another, include shipments of "reclaimed rubber." THE INDIA RUBBER WORLD inquired at the customs office in New York on this point, to which it was replied:

This office possessing views similar to those expressed by you concerning the exports of old scrap rubber, held telephonic communication with the shippers before tabulation, in which the question if not "reclaimed rubber" was met with an emphatic denial, and with the assertion that the merchandise was old scrap rubber as described in the manifest.

The same question was laid before the chief of the bureau of statistics at Washington, who communicated with the various collectors of customs, all of whom asserted that the exports through their respective ports had been manifested correctly. Besides, several officials enclosed memoranda from local exporters, who for the most part knew of no rubber scrap exported. A memorandum from Boston stated that the only exports of scrap from there had been made by one company. But while the above details serve to confirm the government statistics, they fail to locate the actual shipments of rubber waste.

* * *

CORRESPONDENCE was then opened with some important houses in the trade, one of the largest of which responded:

We beg to say that we are entirely in the dark in regard to the matters referred to in your letter and therefore regret that we cannot enlighten you.

Another letter ran:

At times there is a better market abroad for some grades than here [New York], and at such times there are no doubt fairly heavy shipments to the Continent. Usually, however, the condition is the reverse of this.

A letter from the English trade said:

To my mind the import of waste rubber from the United States to this country is infinitesimal as compared to our exports to America.

* * *

STILL, waste rubber is exported from the States. One European firm of waste rubber merchants informs THE INDIA RUBBER WORLD that they import from this side 200 to 300 tons per annum, and several other firms known to them buy considerable quantities in America. "What I import mostly from America," says the writer, "are ebonite waste, ebonite turnings, and certain kinds of mechanical rubber waste; sometimes, automobile tire waste also. In fact, I believe there is no grade of rubber scrap which, at one time or another, cannot be bought to advantage on your side and sold in Europe. It is also possible that at times old india-rubbia boots and shoes are bought by European mills and reclaimers, but we have only half a dozen mills which use this stock. When the market is low on your side it is not unlikely that some shipments are brought over here."

Still another correspondent expresses the opinion that, while there are certain grades of rubber waste, such as floating stocks and compounded inner tubes, for which there is no sale in America, and which heretofore have had a good sale in Europe, in his opinion the principal export consists of American boots and gloves, which, for reclaiming purposes, are superior to those of European makes.

It may be added that, in the lists of rubber shipments printed in the *India-Rubber Journal*, the Northwestern Rubber Co., Limited, of Liverpool, appear as very large importers of rubber waste, though no indication is given of its source. This is an extensive reclaiming plant, using the same grades of waste as are used in America, and it is possible that their consumption will account for a considerable portion of the scrap exported from the States.

CARE IN HANDLING RUBBER CEMENT.

THE handling of rubber eement in the shoemaking room requires constant care, in order to prevent waste, and to preserve a neat appearance of the premises. A device for keeping cement from being spilled on the floor when taken out of the tank and put into the cement pot by the workmen is described as follows: The tank is put on a sort of platform and boarded up on three sides, leaving one side open for the tank faucet to extend out. This platform has a drawer that pushes under it. This drawer is longer than the platform box, so that when pushed in as far as it will go the cement pot cannot be placed directly under the tank faucet, for this drawer extends out in the way of it. To set the cement pot under the cement faucet, the drawer must be pulled out and the pot set inside of it. Then, if there is any spilling of cement, or any running over out of the tank before the faucet is shut off, it runs into this extended drawer and not on to the floor.

The Insulated Wire Manufacture—II.

By a Practical Man.

THE testing department of a large insulated wire factory is a most interesting as well as important place. Here the novice becomes duly impressed with the fact that the drudgery of manufacturing has an occult side. The very sound of "ohm" and "megohm" gives him a creepy sensation. The electrical engineer, however, is generally keenly alive to the importance of his duties. He must put voltage on every coil and try it out for good or ill. To aid him in locating defects he uses a galvanometer. It contains a mirror less than an inch square, which is suspended and adjusted to the mechanism by means of very delicate wires which are sensitive to the slightest variations in the electric current. In front of the galvanometer, a few feet distant, is a scale designed for measuring the megohm resistance of insulation. Through the frame that sustains this scale projects a small tube, so placed that the electric light at one end shines through it directly upon the small mirror described, and is reflected back upon the scale of measurements. When a coil is to be tested it is connected with the galvanometer. Immediately the current is turned on, its delicate mechanism causes the little mirror to turn, and as it turns, the reflected light travels along the scale and tells the operator the megohm resistance. If the coil is sound and strong, the light travels quickly. If the insulation is poor, the light moves slowly and but a short distance.

The galvanometer, together with a lot of arithmetic, enables the operator to figure the exact location of a defect in a wire that has been twisted into a cable. For it must be understood that when a cable is made from a number of insulated wires, each wire, although separately tested, is again tested after having been made a part of it. It is occasionally necessary to tear apart a cable, that repairs may be made, and it is the province and privilege of an electrical engineer to locate the source of the trouble.

Repairing defects in insulation is accomplished by cutting away the rubber at the point where the electric current burned through. The coil is placed upon a drum, and an end of the wire carried to another drum, upon which it is bound as fast as inspected and repaired. The first drum is connected with the system by means of a weak current, and a circuit is established through means of another wire, the end of which the repair man carries in his mouth against his tongue. The wire that is being rapidly unwound passes through his hand, and the instant a defect in the insulation is reached, he receives a slight shock. Upon cutting away the rubber about a defective spot, a strip of thin rubber is wound about the place until, by degrees, it is built up to the outside diameter of the insulation. These patches are then carried in a sectional electric vulcanizer and the wire again tested as described.

Once marked "O K" the wire is ready for immediate use in the telegraph or telephone service, or for various combinations in stranded conductors or cables. For some purposes two or more such wires, before vulcanization, are twisted together and covered with a cotton thread braided on, then run through the tubing machine to receive another cover of insulation, this in turn being covered by a braid of cotton or silk. Orders frequently specify that a number of small wires shall be twisted together before being covered with insulation. They are called "stranded conductors." Such a conductor receives the insulation coat in a tubing machine in precisely the same manner as a single wire. Two such conductors are sometimes twisted together, covered with a cotton braid, and the whole saturated with a waterproof compound. Again, two stranded conductors, insulated and twisted together, have the space between twists, so to say, filled in with a jute yarn or "lateral." This is then covered by a frictional tape, and finally by a cotton braid, duly coated with waterproofing compound. The braided cover for insulated wire serves the double purpose of protecting the rubber cover from injury and imparting a handsome finish. Cotton, silk and other threads are used, in plain white, or brilliant red, greens, yellows, bronzes, and combinations of colors, so applied as to create a figured design in the cover.

The braiding department of an insulating wire factory is an interesting and noisy place, with its hundreds of whirring wheels, and thousands of clicking shuttles. Braided covers are not, however, confined to use of thread. For larger insulation heavy twines, jute and asbestos are used.

This brings us to the consideration of cable manufacture. Cables, by the way, are not necessarily submarine. They are used in underground conduits, and suspended from telegraph poles, in large buildings, shops, battle ships, and numerous other situations. The finished outside diameter of cables ranges from ½ inch to 4 or more inches. One of the most interesting sights in the cable department of an insulating factory is the application of the cover. Cables are frequently made up of uncovered wires, as many as 700-20 B & S being twisted together, and occasionally much larger ones are made. Such a cable is wound upon a large spool and placed in line with the tubing machine. Let us suppose that all preliminaries are completed, *i. e.*, a sufficient quantity of insulating material at hand, the work of centering the metal cable completed, *i. e.*, so adjusting it to the machine as to secure a rubber insulation of even thickness.

The word is given, the machine starts, and the end of the metal cable is thrust into one side of the tubing machine head, to immediately appear upon the other, rubber covered. There is a dignity of movement in the slow unwinding of the great coil, like a huge silver boa constrictor, diving into a hole after its prey, to reappear transformed into one of the great modern world wonders—an electric cable! The steady, forceful onthrust of this prodigy of the mine and the forest, is impressive. Here is no ordinary job. There must be no mistakes, no mischance, no miscalculation. The "feed" must be "just so," supplies of material continuous and uniform in quality.

Three men are attending to the machine, three more are uncoiling. The foreman, callipers in hand, is everywhere, the soul of expert concern. The cable has now projected its huge bulk along the carrying table where half a dozen men are protecting it against possible abrasion. It is almost scorching hot, hence it is no "cinch" to help it along. It reaches the great steel drum that is to hold it, and slowly, with most delicate care, is helped to make the first turn. In a half hour, perhaps, this part of the work is done. The cable, coil upon coil, suspended in midair, seems a sleeping monster. It is, however, but half completed. Before it is ready for the vulcanizer it must have a strong coat braided about it of hemp, or asbestos, or cotton. This will be covered in turn by waterproof tape, and over that again an armor of galvanized iron wire.

Or, possibly, the specifications call for a cable with an armor of lead. In such case the rubber insulation is first vulcanized and then wound with tape. The lead armor is applied in the following manner: on one side of an hydraulic press with appliances for cable covering stands the smelter. It is elevated above the floor level 3 or 4 feet, so a spout may convey its molten contents to the chamber in the top of the press. This chamber is like a huge cap on the top of the ram, and, in being lifted, receives the end of a steel plunger that exactly fits into it. The molten contents, therefore, of the cap must either check the hydraulic pressure, or get out. This latter it promptly does, covering the cable with a thick coat that looks like new silver, as it slowly passes from the press.

Immediately it sags into a long, narrow tank set into the floor, filled with water, thence to be wound upon a drum and made ready for shipment. It sometimes occurs, however, that this lead armor is not sufficient, and galvanized iron wire is wound over that, to make assurance doubly sure.

The preceding will, perhaps, convey some idea of the methods used in manufacturing insulated wire. To be thoroughly appreciated, however, like most good things, each process should be seen. It is one of the younger industries to utilize india-rubber, but in a few years' time has grown to huge proportions. It has been estimated that the combined output of all concerns in this industry approximates 2,500,000,000 feet annually, or enough insulated wire and cable to go 18 times around this weary world at the latitude whence the rubber comes.

The province of the chemist in this business is, in many respects, unusual. He must be more than a mere chemist—in short, a rubber chemist, a specialist. Success in this field necessitates a wide, practical knowledge of gums, mineral substances, reclaimed rubbers, and the processes through which each passes to make it valuable in insulation. The superintendent has many heart to heart talks with his chemist and must repose the fullest confidence in his acumen. He is called upon to clear up many a deep mystery surrounding the composition of rival insulation, and if the truth were known, many are the times when his best knowledge fails him at a critical point.

The chemist is, however, of the greatest value in disclosing adulterations when they occur in the various minerals used in compounding. He can tell you a whole lot about percentages of resins in new gums, and has assisted materially in the selection of such as are peculiarly suitable for wire insulation. To him are sent samples of all the factory compounds, that the percentage of free sulphur and acetone extract may be of record. He is also interested in the specific gravity of each compounded stock, and knows to what extent a given gum, or mineral, or shoddy, affects its insulation qualities, elasticity and durability. Always he has to keep in mind that compositions that do not make for good insulation are of no value in this business, however great their qualifications in other directions may be. Consequently he favors compounds containing zinc, lime, magnesia, antimony, pentasulphide, etc., because they tend to improve insulation. His laboratory experience makes him acute in diagnosing hard cases.

An illustration: A superintendent went to his chemist, much perturbed because a certain standard stock had, in less than a year's use on wire, shown marked signs of deterioration. Review of the history of the compound checked up all right to a date when a new gum costing somewhat less than that first used had been substituted. Early samples and electrical tests had been satisfactory, but chemical analysis now discovered an unusual percentage of free sulphur in the insulation, and that the new gum contained a large proportion of resin. In view of the fact that the compounder could not have leased his formula on the possible resin in the gum, the chemist suggested that the extra resin had absorbed such a proportion of the sulphur item in the compound as to leave an insufficient quantity for vulcanization; hence it followed that the insulation, being under-vulcanized, lacked the one element necessary to its durability, and "perished" prematurely.

CHICLE.—British Honduras continues to export an increasing amount of chicle, principally to the United States. After the yearly shipments for nine years had averaged 318,000 pounds, they rose in 1904 to 773,323 pounds and in 1905 to 1,523,663.

CHICLE IN NICARAGUA.—The Bluefields *American* says that the chicle tree grows well in the interior of Nicaragua, and is to be found in the forests on the eastern coast. The tree is called by the natives "nispero" and by English speaking persons "medlar."

ATTEMPT TO TAX WASTE RUBBER.

AN importation of waste rubber at New York was assessed at 30 per cent. *ad valorem*, against which the importer protested, when the United States general appraisers [*Treasury Decisions*, August 1] sustained the protest, admitting the merchandise free. The importation was invoiced as shredded rubber waste. The customs department had held previously that reclaimed rubber, the product of rubber scrap, was dutiable at 30 per cent. *ad valorem* as a manufacture of rubber not specially provided for under paragraph 449 of the Tariff act. In the present case the collector decided that certain processes which the merchandise in question had undergone had converted it into an article of manufacture—*i. e.*, reclaimed rubber. But the general appraisers held:

"It needs no argument to show that it was the intent of Congress to make all wornout india-rubber suitable only for use by manufacturers, free as raw material. The testimony in this case shows that the Waste Rubber Co., located in London, England, dealt in wornout articles containing rubber, such as old shoes, galoshes, automobile and bicycle tires, etc., which they assorted (the sorting probably including separating by hand the rubber from fibrous and other extraneous matter) and then ground for convenience of transportation, or, as one of the witnesses—an employé of the exporting firm—testified, to make it more attractive to manufacturers of rubber goods."

It was held to be settled that shippers are entitled, in order to reduce transportation charges on bulky commodities, to reduce such substances to a more condensed form without changing the tariff classification thereof, provided the distinctive name of the goods or their intended purpose of use does not become changed. Regarding this specific importation, the general appraisers ruled: "The merchandise was originally, and has not ceased to be, refuse rubber. It is fit only for remanufacture."

NEW TRADE PUBLICATIONS.

THE RUSSIAN-AMERICAN INDIA RUBBER CO. (St. Petersburg) have issued this year a new series of lists of their numerous products, embracing practically everything that is made of rubber, soft or hard. This company, established in 1860, has grown steadily until it is considered by many to be the largest in the world in the rubber industry, and it is prepared to supply whatever the Russian market demands in the way of rubber goods. We have before us a general list of the Russian-American goods [7"x10½". 32 pages] in Russian and another copy in German, with a number of separate lists each devoted to some specialty, as tires and accessories, waterproof clothing, etc.

MASSACHUSETTS TALC CO. (Boston) issue to the trade a handsome pamphlet giving a concise description of talc and its uses—particularly in the india-rubber industry—an account of how it is prepared for market, the whole being illustrated by a number of views of the interior of their mill at Zoar, Mass. [9"x6½". 37 pages.]

EMPIRE AUTOMOBILE TIRE CO. (Trenton, New Jersey) describe their automobile tires, inner tubes and repair kits in a very neat booklet. [4⅞"x7". 15 pages.]

THE DUNLOP PNEUMATIC TYRE CO., LIMITED (London) send us a very complete illustrated catalogue of their motor tyres and tire and motoring accessories, including waterproof garments. The very successful record of Dunlop tires in 1906 is given in some detail. [4⅞"x7⅛". 106 pages.]

C. J. BAILEY & Co. (Boston) issue an illustrated catalogue of the large assortment of Waterproof Coats, carried at "Bailey's Rubber Store," No. 22 Boylston street. [3¼" x 6. 24 pages.]

A SUGGESTION which comes from the shoe industry is that a piece of rubber is a good article to have at every bench where colored shoes are made, to take off the wax, or dirt of any kind.

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

IN a glance at the most recent statistics of the exports of British rubber goods, one or two features stand out in prominence and a few comments may not be out of place. Continued growth in the exports of rubber boots and shoes is shown, and this must be largely attributable to the North British Rubber Co., Limited, as by far the largest of the few British firms producing these goods. It is worthy of note that Germany took ten times the quantity of boots and shoes from England in 1906 that was taken in the previous year, while the demand from China showed a large falling off. In general rubber goods, France continues to be by far our best customer, a fact which is considered very surprising by the *India-Rubber Journal*. I cannot say that I share this surprise; of course no details are available, but I don't think I am far from the mark in attributing an important share of the French imports, in value at any rate, to fine cut sheet. This is largely used in Paris for the manufacture of rubber goods of one sort or another and the bulk of the sheet comes from England. The English houses have got so well established in France with this article that the German competition has not come to much. In the case of cut sheet there is now French, German and Belgian competition, but I was told not long ago in Paris by one who has many years' connection in this branch that where the best quality is wanted the English sheet is always considered. Compared with many other classes of goods the prices for sheet are high, and the total values serve to make the exports of manufactured cheaper goods to other countries small in comparison. This of course does not explain away the great falling off in recent years in our exports to Colonial markets—a disquieting feature of the statistics.

BRITISH EXPORTS OF RUBBER GOODS.

UNDER the title of "The Industrial Police," the *Saturday Review* in a recent issue commented on the parliamentary proceedings in connection with the bringing of certain dangerous trades under the Factory acts. After referring to the necessity of having more inspectors, and to the desirability of these being men of education and attainments, the writer goes on to say: "It is the commonest of cases for the ignorant to suffer from their own perversity, but the consequences are too serious for them to be let to bear the brunt of their own wrongdoing." It is then argued that the inspectors should have more power than they possess at present to insist on work people taking proper precautions. It certainly is the case that precautionary measures are habitually disregarded by work people, with the consequence of stigma attaching to employés who may have done all in their power in the way of providing hygienic appliances to mitigate acknowledged evils. The writer goes on to say that there is a dispute whether naphtha poisoning in dry cleaning and rubber factories is a form of industrial disease and he expresses the opinion that the home secretary's statement that carbon bisulphide and not naphtha is the delinquent is a distinction not of much importance to india-rubber workers who are poisoned in their trade. Here, I think, the writer is showing his ignorance of the trade; he seems to imagine that the naphtha and bisulphide vapors are breathed at one and the same time, and that one cannot discriminate between them. I am not in the secrets of the dry cleaning trade, but believe that light petroleum is used and not the solvent naphtha of the rubber works. As far as rubber works are concerned, I think the departmental committee on whose findings the home secretary is acting were quite right in refusing to recognize naphtha vapors as poisonous, and I don't know of any evidence to the effect that naphtha poisoning is an industrial disease. Under certain constitutions the concentrated vapors if breathed in a confined space may certainly have an intoxicating effect, but this is merely temporary, recovery taking place after a short time in the open air. However, the discussion on the subject will have done some good if it leads to the recognition of the fact that work rooms should be efficiently ventilated and that it is desirable to put workers who are particularly affected by the vapors in some other department. I have not a word to say against the carbon bisulphide regulation, but factory inspection may be carried to too great lengths with the result of prejudicially affecting both the employers and the employed.

FACTORY INSPECTION.

SHALE spirit, a product of the shale distillation industry of Scotland, has of late years been more largely used in English rubber works than was formerly the case. Not only has the lower price proved an attraction over coal tar naphtha, but the product is of decidedly better quality than used to be the case twenty years ago, a less penetrating smell and freedom from heavy oils being distinguishing features of the product of to-day. Quite recently, however, the price has risen to 1 shilling per gallon, bringing it nearly on a level with coal tar naphtha, and if a further slight rise should take place there can be little doubt that the latter will be bought by those who are now using the shale spirit. The rise in the price of the latter appears to be due to its use in motor cars in place of petrol (gasolene), and if its suitability is generally recognized the manufacturers will find the new market profitable enough to enable them to bear the secession of the rubber manufacturers with equanimity.

SOLVENT PRICES.

THERE was nothing about the annual meeting held this year in Birmingham which calls for particular notice here. The visits to factories in the district did not include any of the rubber works nor were any of the rubber manufacturers who are members of the society present. Visits were paid to the Daimler motor car works at Coventry and to the Rudge-Whitworth cycle works. The Daimler company had tires of various makes in their shops, but they merely fit them to the new cars at the order of the customer, and do not take any responsibility for them. I did not go to the Rudge-Whitworth works, but from what was told me I gather that the chemical laboratory and the arrangements for mechanically testing the tires proved of great interest. Evidently the company has now no need of such expert assistance as was at one time rendered by the late Dr. Weber. Besides chemical tests, the tenacity of the rubber and canvas and the capacity for resisting abrasion are regularly determined by special mechanical tests.

SOCIETY OF CHEMICAL INDUSTRY.

So far the weather this summer has been all in favor of the macintosh instead of the parasol. But quite apart from such transcient influences there is an undoubted reaction in favor of the macintosh to the detriment of the showerproof garment. It is said that this reaction occurs in cycles of about fifteen years, though I don't know how far this statement will find corroboration in the trade. With a further statement that at these recurring periods the goods are at first of good quality, and because of lower and lower grade owing to internecine competition, there will probably be agreement. It will be unfortunate, then, if the lessons of the past are discarded and if history repeats itself with the result of distrust as to quality filling the minds of purchasers previously inspired with confidence. In one way the present "boom" has come at an awkward time. Owing to the almost unexampled activity in the textile industries of Lancashire and Yorkshire the waterproofers are finding it exceedingly difficult to get prompt deliveries; indeed they consider themselves fortunate if orders are executed within three months.

WATERPROOF BRANCH.

MENTION has been made in this journal more than once of the new use which has arisen for rubber hose in connection with

THE STEAM BRUSH CO.

cleaning of carpets by the vacuum process. The advent of the Steam Brush Co., of Wandsworth, London, heralds a greatly increased demand for steam hose. The company, which is removing the grime from prominent buildings in our large towns, uses steam at about 50 pounds pressure from a portable vertical boiler, and considerable lengths of externally armored rubber hose of one inch diameter are used in the distribution of jets.

TYRE VS. TIRE.

IT is surprising how many people imagine that the common English spelling of this word is to be found in the English dictionaries, whereas the American "tire" is universally given. Londoners who do not read our trade journals have been perplexed by the very prominent gold letter sign of the Hartridge Tire Syndicate in the Strand, London, and I hear of much animated discussion anent the spelling. There can be no doubt that the American spelling is the most correct, and I have not come across any educated person who has tried to prove the contrary.

LEATHER SUBSTITUTES.

FROM time to time mention has been made in these notes of the progress in the demand for upholstering materials to replace leather. A material which is now being manufactured on a large scale and for which there is a considerable demand is the Methley patent cloth. Works have already been established on the Continent, at Mannheim and Naples, as well as in France and Alsace-Lorraine. A company is now being formed to start the manufacture in England and the United States. India-rubber machinists are interested in the move, as the spreading machine is an important item in the works equipment, and I understand that a large order for modern type machines has recently been placed in England.

PERSONAL AND BUSINESS NOTICES.

MR. L. H. SWAIN has severed his connection with the Dook-Swain Tyre and Rubber Co., Limited, of Soho Works, Ancoats, Manchester, though his patronymic still remains in the title of the firm, who, it will be remembered, took over the business and premises of the late Wedge Tyre Co.

Mr. W. Coulter, who two years ago was manager of the elastic thread department at the "Prowodink" rubber factory at Riga, and who left Russia during the late disturbance, has recently left England for a post in the spreading department at the Harburg works of the Harburg-Vienna company. For some years Mr. Coulter was in charge of the spreading department at the works of Charles Macintosh & Co., Limited, and some patents he has taken out are in connection with spreading machines.

Mr. J. F. M. Fuller, M.P., the new vice-chamberlain, has a family connection with the rubber trade, as his brother has a large interest in the Avon India Rubber Co., Limited.

A firm who in recent years have made large quantities of rubber heel pads to order for the trade tell me that they have given up this branch, as there is such a very small margin of profit in it. The good class business is all right, they say, but there is comparatively little of this, the bulk of the trade being concerned with low quality material.

Messrs. Claudius Ash & Sons, Limited, the dental supply firm, are largely concerned in the newly floated Platinum Corporation. The company use platinum largely and desire to be concerned in its production. At the beginning of this year this rare metal rose from £5 to £8 per ounce, but recently it has again fallen to the former figure. The high price and market vagaries of the metal are a source of anxiety to all users of it, but so far others have not followed the lead set by the dental firm in becoming interested in its mining and metallurgy.

THE Belgian consul at Manila reports favorably on the beginning which has been made in rubber planting in the Philippines, though as yet it is not large in extent. He mentions a native vine, *Parameria Philippinensis*, on Mindoro island, as a rubber producer of considerable promise.

THE AMAZON RUBBER MOVEMENT.

THE exports of crude rubber from the Amazon regions during the crop season ending June 30 were, as already reported, the largest on record. The shipments taken into account at Pará (through which port all the Amazonian product passes) exceeded by nearly 5000 tons the figures for 1904-05, which until now has been the banner year. This rubber may be classed as follows, Pará being credited with the quantities actually shipped from there, no matter where produced. The remaining quantities were shipped direct from Manàos, Serpa, and Iquitos, to Europe or New York.

[*The Figures Indicate Weights in Kilograms.*]

SHIPPED FROM—	New York.	Europe.	Total.
Pará	10,227,296	8,146,221	18,373,517
Manàos and Serpa	8,407,912	8,432,652	16,840,564
Iquitos (Peru)	29,415	2,780,165	2,809,580
Total	18,664,623	19,359,038	38,023,661

The shipments credited to Pará are proportionately larger than in some former years, for the reason that the rubber from the Acre district now goes largely to Pará for shipment, instead of being handled at Manàos.

The rubber is classed as to grades as follows:

GRADES.	New York.	Europe.	Total.
Fine	8,979,796	10,099,486	19,079,282
Medium	2,053,517	1,328,945	3,382,462
Coarse	5,948,358	3,225,803	9,174,161
Caucho	1,682,952	4,704,804	6,387,756
Total	18,664,623	19,359,038	38,023,661

The actual export from Manàos and Iquitos between July 1, 1906, and June 30, 1907, differed slightly, of course, from the shipments from Manàos and beyond actually passing Pará between those dates, since several days are consumed by transit down the river. The destination of these shipments was as follows:

New York	8,307,953	kilos
Liverpool	7,003,212	"
Havre, Hamburg, and Antwerp	4,053,279	"
Total	19,364,444	"

Manàos shipments include the product of Amazonas state, and rubber in transit from Peru, Bolivia and Venezuela. The details of Iquitos rubber passing Manàos were:

Fine	1,190,753	Caucho	1,081,735
Medium	83,172		
Coarse	469,897	Total	2,825,557

This rubber probably shows a larger proportion of "medium" on being regraded in the consuming markets.

A STORY BY COLONEL COLT.

THE Boston *Globe* says: President Samuel P. Colt, of the United States Rubber Co., was discussing in New York the amicable trade agreement that has been made between his firm and the Intercontinental Rubber Co.

"It is best," he said, "for competitors to agree to be fair and honest with one another, and this agreement of ours is a afir and honest one. It is not like those wherein two rivals, while pretending to be fair, yet knife one another continually in the back. Such hypocritical agreements remind me of two children, two little boys I know.

'They were lnching, Billy and Jack, and when the butler brought on the dessert it was seen that there was only one orange in the fruit basket. Instantly Billy, the larger boy, set up a loud bawling.

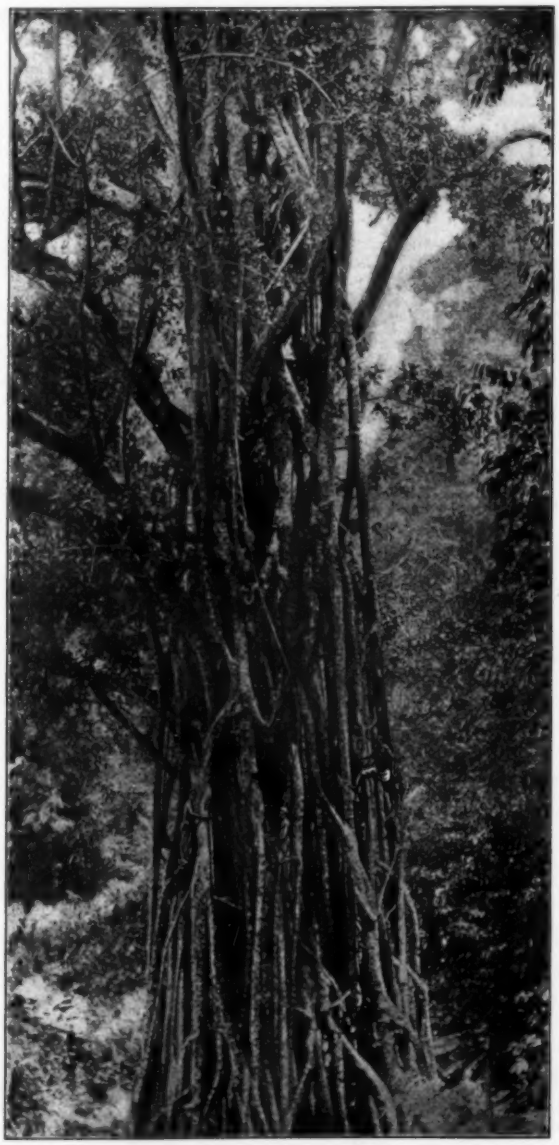
"'Now what's the matter?' said the governess. 'What are you crying about, Billy?'

"'I'm crying,' Billy answered, 'because there's no orange for Jack.'"

Progress of Rubber Planting.

ANOTHER SUMATRA RUBBER COMPANY.

NOWHERE is a more lively interest displayed in rubber culture than in Germany, where upwards of twenty plantation companies have been formed already, with investments in the various German colonies, but to a certain extent also in some other localities, including Sumatra, which island has been demonstrated to be well fitted for growing rubber. The Sumatra enterprises, however, though involving German capital, for the most part are organized in Holland. Such a company is the Kautschuk-Plantage "Aek Tapoes," the object of which is to create a rubber property at Siboga, a town on the west coast of Sumatra, in the province of Tapanoelie (or Tapanuli), and on the bay of the same name. The soil, climate, rainfall and labor conditions all appear to be favorable, and there is considerable native *Ficus*. The plan is to develop about 450 hectares [=1112 acres], planting *Ficus, Hevea* and *Manihot* rubbers. The land is owned by W. J. Kehlenbrink, of Rotterdam, who has been growing tobacco in Sumatra for the past seven years. He is being assisted in forming the company by Mr. Emil Spannagel, managing director of the Vereinigte Berlin-Frankfurter Gummiwaaren-Fabriken, of Berlin, who for some time past has been identified with other important rubber planting projects. Mr. Spannagel has reported most favorably on the native rubber from Tapanoelie province, from trees which will be retained on the property referred to above.



MAMMOTH RUBBER TREE IN SUMATRA.

[A *Ficus elastica;* named the "Kehlenbrink" tree, in honor of its discoverer. Note the three natives gathering rubber, about one-fourth the height of the tree.]

In this connection may be mentioned what probably is the largest rubber tree in the world—a *Ficus elastica* on the estate of the new company. It is supposed to be over 100 years old and has yielded more than 100 kilograms [=220 pounds] of rubber in a single year. The tree is 60 meters [=196 feet] high and so large that thirty men with outstretched arms are necessary to encircle it. Mr. Spannagel has christened this the "Kehlenbrink" tree, in honor of the gentleman named above. In the accompanying illustration three natives are shown extracting latex, about one-fourth the height of the tree.

A RUBBER FACTORY OPENING.

THE ceremony of opening the factory of the Sungei Kapar Rubber Co., Limited, in Selangor, Federated Malay States, occurred on June 15, in the presence of a number of ladies and gentlemen. The 20 HP. oil engine was started by Mrs. R. W. Harrison, the wife of the visiting agent, after which she declared the factory open, when tiffin was served to the guests. The entertainment also included music and, later, dancing by some of the estate employés. The latter, to the number of 800, dressed for the occasion, were also served with refreshments. The coolies had tastefully decorated the factory. The machinery was built by Brown & Davidson, of Ceylon. The Sungei Kapar company, founded in January, 1906, with £110,000 [=$535,315] capital, and headquarters in Edinburgh, have 1330 acres planted to rubber and are beginning to tap this year.

PLANTING ENTERPRISE IN BORNEO.

RUBBER planting in Borneo has received a decided impetus from the policy of encouragement adopted by the British North Borneo Co., a chartered company having sovereign and territorial rights over the whole of the state of British North Borneo—some 31,000 square miles. This chartered company has granted concessions to tobacco planting, mining and other companies, some of which have proved very profitable, and through whose operations the profits of the chartered company have been greatly enhanced. Recently concessions have been granted on like terms to companies for planting rubber (mainly *Hevea*), a list of which follows, together with capital and planting details reported at the forty-ninth half yearly meeting of the chartered company in London:

British Borneo Para Rubber Co., Limited. Formed April, 1905; offices, Glasgow; capital issued, £30,000; rubber planted, 1,000 acres.

Tenom (Borneo) Rubber Co., Limited. Formed January, 1906; offices, Glasgow; capital subscribed, £43,000; rubber planted, 400 acres.

Manchester North Borneo Rubber Co., Limited. Formed February, 1906; offices, Manchester; capital subscribed, £50,000; rubber planted, 500 acres.

Langkon North Borneo Rubber Co., Limited. Formed March, 1906; offices, London; capital subscribed, £60,000; rubber planted, 600 acres.

Beaufort Borneo Rubber Co., Limited. Formed April, 1907; offices, London; capital subscribed, £60,000; rubber planted, 104 acres.

The authorized capital of most of the companies is £100,000. The chartered company guarantees dividends for a certain period and will exempt their rubber products from an export tax. The

RUBBER TAPPING ON SIKONG ESTATE, BRITISH NORTH BORNEO.
[Property of North Borneo Trading Co., Limited. See THE INDIA RUBBER WORLD, November 1, 1905—page 48.]

labor support is reported ample, except that the Manchester North Borneo Rubber Co. are recruiting labor from Java. These companies have been formed for planting rubber alone, except that some of them will plant tobacco or other catch crops at the beginning.

The above names do not complete the list of companies planting rubber within the territory of the British North Borneo Co. One or more of the tobacco companies referred to above have granted sub-concessions, so to speak, to companies formed wholly or in part to plant rubber, two of which are the British North Borneo Plantations Co., Limited, and the Sapong Rubber and Tobacco Estates, Limited, both registered in London in April, 1905. Considerable planting has been done by these companies in the aggregate and tapping has been in progress for the past two years. An accompanying illustration relates to tapping rubber on Sikong estate, owned by the North Borneo Trading Co., Limited.

PLANTATION RUBBER IN MEXICO.

"THE steadily increasing amount of the cultivated rubber in the market is making an impression. Karl G. Schweickhardt, agent for Harburger & Stack, of New York, told me that when he opened the office at San Juan Bautista six years ago he bought during the first year but four tons of rubber, that during the past year he bought 104 tons and that the increase was due wholly to the increase of cultivated rubber. He gave me the name of one Mexican planter from whom he received last year 12,000 pounds of rubber, and of several others from whom he received as much as 7000 or 8000 pounds. He himself has purchased land with the intention of planting 100,000 trees."—*Report of* J. E. MCGILVREY, *on Montezuma Plantation.*

A PRACTICAL TAPPING TOOL.

THE U-shaped rubber tapper invented for use on *Castilloa* trees by Virgil S. Smith, the owner of a private rubber plantation at Eccuintla, state of Chiapas, Mexico, appears from all accounts to be doing good work. Its use inflicts little injury to the tree, the wounds healing within a short time, whereas the cuts made with the machete require months to heal, and leave the bark scarred permanently. The tapper is easy to use, a peon being able to make four cuts per tree on 80 to 100 trees in a day, finishing before noon, to allow time for coagulation the same day. Mr. Smith finds that more latex is obtained by the use of this tool than with the machete.

The principal feature of this tapper is a thin piece of inch wide steel bent to a U shape, with slightly flaring edges, and attached at right angles to a wooden handle 20 inches long, and provided with a gage to regulate the depth of cut. Mr. Smith's method is to make the cuts in pairs, terminating at the bottom in a V point, at which a cup is placed to receive the latex. Four such cuts are made to a tree, preferably not less than 20 inches apart. The idea is shown in an accompanying illustration, together with the manner of holding the tapper when in use. This tool is patented in Mexico (No. 5120, November 30, 1905). The metal parts are made in the United States and attached to the handles on Mr. Smith's plantation. The tappers sell at $36 (Mex.) per dozen.

Mr. Smith began planting in 1900 and is now tapping trees five, six and seven years old. He has tapped some trees for the third time within 18 months and reports the collection of 8 ounces of dry rubber at each tapping.

THE MEXICAN RUBBER CO., LIMITED.

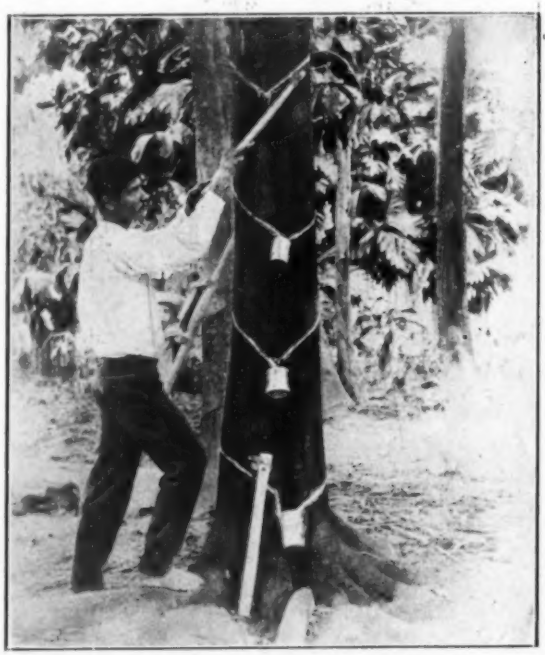
THE rubber estate "Hacienda La Esperanza," near Tierra Blanca, Vera Cruz, Mexico, mentioned several times in THE INDIA RUBBER WORLD as having been formed by Mr. George Cullen Pearson, is now owned by The Mexican Rubber Co., Limited, of London. Mr. Pearson, who is now residing in England, his native country, was at first managing director of the company, but has been succeeded by Mr. Horace E. Levesley, who has been associated with the management from the beginning.

MALAY RUBBER FIELDS.

THE Anglo-Malay Rubber Co., Limited, in the Malay States, gathered 16,745 pounds of rubber in June this year, against 5717 pounds in the same month in 1906. Their total production last year was 91,719 pounds.

Bukit Rajah Rubber Co., Limited, in the Malay States, have 2012 acres under rubber, including 243,580 trees, in age from one to ten years. There were tapped during the past year 88,341 trees, yielding an average of 1.35 pounds. Last year 31,457 trees yielded an average of 1.02 pounds. The rubber yield for three years has been: 6811 pounds in 1904-05; 33,203 pounds in 1905-06; 118,982 pounds in 1906-07. The dividend for the year ending March 31, 1907, was 30 per cent. on the issued share capital of £66,700. There was a slight income from coffee (which is declining) and cocoanuts.

Highlands and Lowlands Pará Rubber Co., Limited, report the harvesting of 91,555 pounds of rubber during the first half of this year, against 40,571 pounds for the same period of 1906.



SMITH'S U-SHAPED RUBBER TAPPER.
[Six year old *Castilloa elastica* on the plantation of V. S. Smith, Escuintla, Mexico.]

NEW RUBBER PLANTING COMPANIES.

THE list which follows of Eastern rubber planting companies formed during the first half of 1907 is not complete, but comprises only new enterprises in regard to which accurate details are available at this time. The authorized capital stated in their organization papers is nearly $13,000,000 in American gold, as follows:

	Capital.
Ceylon (12 companies)	$5,734,359.15
Federated Malay States (8 companies)	1,864,670.50
South India (3 companies)	681,310.00
Sumatra (6 companies)	3,672,065.00
Java (1 company)	170,327.00
Borneo (1 company)	486,650.00
Total (31 companies)	$12,609,372.15

In some cases these companies have been formed to create new plantations, in others to acquire rubber estates already more or less developed. The companies of the latter class, however, nearly all purpose to plant additional rubber. The new companies in the list, therefore, may be expected, in the near future, to extend very materially the existing acreage of rubber under cultivation.

CEYLON.

Udabage Tea and Rubber Co., Limited, floated in Ceylon early in 1907. Capital, 1,000,000 rupees [=$342,433.33 gold]. To acquire Udabage estate, Kegalle district, of about 1,626 acres, of which 500 in tea, 565 in rubber and 400 cleared for planting rubber. Purchase price, 500,000 rupees—four-sevenths in shares.

Udakelle Rubber Co., Limited. Gazetted Colombo February 1, 1907. Capital, 750,000 rupees [=$243,325].

Kegalle Rubber Co., Limited. Gazetted Colombo February 1, 1907. Capital, 450,000 rupees [=$145,995].

Aranayake Rubber Estates Co., Limited. Gazetted Colombo February 8, 1907. Capital, 300,000 rupees [=$97,330].

The Passara Tea and Rubber Co., Limited. Formed in Ceylon in February, 1907. Capital, 500,000 rupees [=$162,216.66].

P. P. K. (Ceylon) Rubber Estates, Limited. Registered London February 19, 1907. Capital, £65,000.

Korossa (Ceylon) Rubber Co., Limited. Gazetted Colombo March 8, 1907. Capital, 500,000 rupees [=$162,216.66]. In the Kegalle district.

Sunderland (Ceylon) Rubber Co., Limited. Gazetted Colombo March 8, 1907. Capital, 450,000 rupees [=$145,995]. Kelani Valley.

Lunuva (Ceylon) Tea and Rubber Estates, Limited. Registered London April 19, 1907. Capital, £150,000. To acquire certain estates in Ceylon and grow tea and rubber.

Parambe Rubber and Tea Co. of Ceylon, Limited. Registered London May 8, 1907. Capital, £40,000.

The Galphele Tea and Rubber Estates, Limited. Registered London June 18, 1907. Capital, £60,000. In Wattegama district.

Rosehaugh Tea and Rubber Co., Limited. Registered Edinburgh June 21, 1907. Capital, £600,000. To acquire estates in Ceylon and the Federated Malay States.

FEDERATED MALAY STATES.

Strathmore Rubber Co., Limited. Registered Edinburgh January 8, 1907. Capital, £25,000. To plant in Selangor.

The Seafield Rubber Co., Limited. Registered London February 7, 1907. Capital, £100,000. To acquire Seafield rubber estate in Selangor, for £64,000; 1,224 acres planted to rubber.

The Labu (F. M. S.) Rubber Co., Limited. Registered London February 9, 1907. Capital, £100,000. To acquire Batang Labu estate, in Negri Sembilan. This year 5,000 trees will be tapped.

Kuang (Selanger) Rubber Co., Limited. Registered London March 7, 1907. Capital, £20,000.

Bukit Lintang Rubber Estates, Limited. Registered Edinburgh April 8, 1907. Capital, £25,000.

Chenderiang Rubber, Limited. Registered London May 29, 1907. Capital, £20,000.

Golconda Malay Rubber Co., Limited. Registered London July 2, 1907. Capital, £80,000. To acquire the Golconda estate, in Selangor, and succeed the Golconda Estate Rubber Co., Limited, organized in Ceylon in 1904.

Sungei Jong Rubber Co., Limited. Registered London July 10, 1907. Capital, £7,000. To acquire rubber lands in Perak.

SOUTH INDIA.

The Travancore Rubber Co., Limited. Registered Edinburgh January 2, 1907. Capital, £40,000. The board reside mainly in Scotland and are interested in rubber in Ceylon.

Central Travancore Rubber Co., Limited. Registered Edinburgh February 7, 1907. Capital, £40,000.

Dimbula Travancore Rubber Co., Limited. Floated in Ceylon March, 1907. Capital, 900,000 rupees [=$291,990, gold]. To lease about 2,500 acres for 99 years and plant in rubber.

SUMATRA.

The Tandjong Rubber Co., Limited. Registered London March 1, 1907. Capital, £100,000. To acquire the Tandjong Kassan estate, of 8,460 acres, in eastern Sumatra.

Sumatra Pará Rubber Plantations, Limited. Registered London March 18, 1907. Capital, £100,000, of which £50,000 offered for public subscription. To acquire the Pangkattan estate, now producing rubber and coffee, in Bila, Sumatra. Rubber yield 13,420 pounds in 1906.

Sumatra Caoutchouc Maatschappij. Gazetted in Holland June 27, 1907. Capital, 750,000 florins [=$301,500]. The Société Anonyme Belge pour le Commerce du Haut Congo take 100,000 florins of stock.

United Serdang (Sumatra) Rubber Plantations, Limited. Registered London July 10, 1907. Capital, £170,000, of which £69,000, offered for subscription. To consolidate Begerpang and Namoe Rambei estates, on which about 2,748 acres are planted to rubber—42,225 "rambong" and 266,000 Pará rubber trees.

Sumatra Caoutchouc Plantagen Maatschappij (Société des Plantations de Caoutchouc de Sumatra). Gazetted in Holland July 10, 1907. Capital, 1,000,000 florins [=$402,000].

Sumatra-Deli Rubber Estates, Limited. Registered London July 17, 1907. Capital, £240,000. To acquire Laut Tabor and Mendaris plantations, in eastern Sumatra, on which are over 350,000 rubber trees (*Ficus elastica*), some of which are now being tapped.

JAVA.

The Simo Rubber Estates, Limited. Registered London, June 4, 1907. Capital, £35,000. To acquire the Simo group of estates, from a Dutch company.

BORNEO.

Beaufort Borneo Rubber Co., Limited. Registered April 22, 1907. Capital, £100,000. To acquire lands from The British North Borneo Co. and plant 1,500 acres to rubber.

RUBBER ON THE LONDON STOCK EXCHANGE.

SHARES of the companies named below have been listed lately on the London Stock Exchange to the amount (at par) named in each case:

Highlands and Lowlands Pará Rubber Co., Limited, £241,454 additional.
Imperial Ethiopian Rubber Co., Limited, £31,000.
Inambari Pará Rubber Estates, Limited, £200,000.
Liberian Rubber Corporation, Limited, £150,000.
Mabira Forest (Uganda) Rubber Co., Limited, £25,000.
Sapong Rubber and Tobacco Estates, Limited, £31,378.
Straits Settlements (Bertram) Rubber Co., Limited, £20,000.
Sumatra Pará Rubber Plantations Co., Limited, £50,000.

The *Financial News* (July 26) reports: "In rubber shares the public are at length taking an active interest, and a large number of shares of all descriptions have been taken by investors.

A Pioneer in the Guayule Field.

IT was early in 1904 that Captain Felix H. Hunicke, a retired naval officer, went from the United States to the uplands of Mexico to look into the question of producing guayule rubber commercially. In spite of the many processes attempted up to that time it had been found impossible to turn out the rubber on a large scale, and it was this problem that Captain Hunicke was called upon to solve. His own story of the manner in which he accomplished it is interesting.

He was out in the desert with an Indian guide when the latter pulled up a shrub and handed it to the captain, remarking that that was the rubber bush; to which the other said: "How do you know?" The Indian indignantly sliced off some of the bark and after chewing it for a few minutes handed to the inquirer a small pellet of rubber. Captain Hunicke was at once impressed with the idea that some such simple process, embracing grinding and water separation might solve the whole problem. He at once went at work on this idea and by using crude machinery which he built himself, was able in a short time to ship a good hard sample of several pounds to New York. Then a little later came the erection of the huge mill of the Continental-Mexican Rubber Co. at Torreon, which is to-day the largest rubber expressing plant in the world.

Considering the fact that the first experimental shipment went forward in January, 1905, and that now the monthly product of the factory is 600,000 pounds, the results attained may be called marvelous. An interesting feature of the case is that he made machinery carry out nature's own process in separating the rubber from the fiber. None the less, however, should he have full credit for a most remarkable achievement and one that has been of great benefit to the whole rubber trade.

FELIX HERMANN HUNICKE.

[Connected with the Continental Rubber Co., engaged in the guayule interest.]

It is because of this success that a sketch of the man himself is timely and interesting. Felix H. Hunicke was born in St. Louis in 1860 and attended the public schools in that city until he was eleven years old, when his parents sent him to Germany, where he remained in school for two years. He returned to St. Louis and took a high school course, after which he went to the United States Naval Academy at Annapolis, where he graduated with honors. He then entered as a midshipman in the United States Navy, remaining for two years at sea, but resigned in 1883 to enter business with his father in St. Louis. He continued with his father's firm for four years, and on the death of the latter went into the same business, in which he continued for some nine years. Selling it out in 1898, at the time of the war with Spain, he re-entered the navy as a volunteer officer, being attached to the United States gunboat *Hist*, on which vessel he was second in command. He served for ten months on this vessel which, incidentally, was in more engagements than any other patrolling the Cuban coast.

At the close of the war, Captain (then Lieutenant) Hunicke received several special service medals and was appointed the chief of the revenue cutter service for Cuba, which position he filled with distinguished ability during the American occupation of three years. When the American forces were finally withdrawn he received a flattering offer to remain in Cuba, but as that meant becoming a citizen of the little republic, he declined it. He also had an opportunity to go to the Philippines for the United States government, but refused that as well. It was at this juncture that he associated himself with the gentlemen who later organized the Continental Rubber Co., and was able by his practical and common sense methods to turn what at one time looked like a failure into a conspicuous success.

Perhaps no man in the Americas has studied the question of the mechanical extraction of rubber from the minor producers more diligently than has the subject of this sketch. Central and South America, Africa, India, and the islands of the Pacific have all come under his ken, and his knowledge, geographical and botanical, along the lines of his specialty is very broad. If the work he has done in Mexico is to be duplicated in Africa, Captain Hunicke evidently is the man to do it.

GUAYULE TRADE NOTES.

TORREON will become a city under a decree of the legislature of the state of Coahuila to be promulgated on September 15. Torreon was only a group of huts 20 years ago—a flag station on the Mexican Central railway. Its progress has been rapid, and it seems destined to be one of the most important cities in northern Mexico. One of its claims to present importance is that it is a center of the guayule rubber interest.

The *Mexican Herald* reports: "A gentleman who lives in Torreon and who was one of the first to discover the value of the guayule shrub, states that a number of the large landholders would begin at once to plant guayule from the seed, as lands that are absolutely worthless for many purposes would be most valuable for the raising of guayule, especially those lands that are rocky."

Exports of guayule rubber from Torreon, Mexico, during the first 26 days of July amounted in value to $376,357.77 (Mex.).

The Mexican Crude Rubber Co. announce a 2 per cent quarterly dividend for September 1. Their guayule factory, now building at Cedral, is expected to be in operation by October 1, and one of their two factories at Viesca is to be enlarged this fall, when their capacity will be 80 tons of guayule per month. The shipments are reported as follows: December, 1906, 20 tons; January, 1907, 25 tons; February, 30; March, 35; April, 45; May, 55; June, 55 tons. The company operates the guayule branch of the Coahuila Mining and Smelting Co., Limited, of Viesca, Mexico. Their offices in the United States are at Detroit, Michigan. They operate under the patents of Ferdinand Ephraim.

TO RENDER GAS TUBING ODORLESS.—It is said that the giving off of disagreeable odor by rubber tubes which have for a time been used in conducting illuminating gas may be prevented by treating them, previous to use, as follows: Mix equal volumes of 36 per cent. alcohol and linseed oil, shaking the mixture well until homogeneous, moderately stretch the tube, and apply the mixture by putting a few drops on a small rag, and rubbing until the surface is quite dry. Repeat the application three or four times, at intervals of a few days.—*Druggists' Circular.*

New Rubber Goods in the Market.

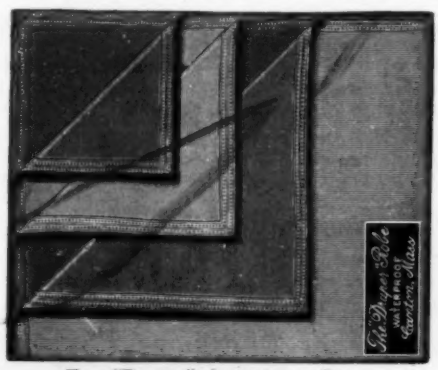
"IDEAL" AUTOMATIC WATER SAVER.

THIS has been described as a "key to man's pocket book on the water bill." If this be true, the people who use the meter water system will appreciate the new device. By the use of this attachment when the man who is watering a lawn, for instance, drops the hose, it shuts off the water instantly, and all waste is precluded. Its simplicity makes it something that a child can handle. There is no question about the matter of fit, as it is made to do duty on any half or three-quarter inch hose, and is adjustable for relief on old hose. Those who have used it claim that it pays for itself in the saving of water the first week it is used, and recommend it for use in factories, and by liverymen and garagemen. The little money saver is of brass and costs $1.50. [Ideal Carriage Washer Co., Rochester, N. Y.]

"IDEAL" AUTOMATIC WATER SAVER.

THE "DRAPER" AUTOMOBILE ROBE.

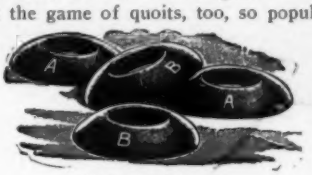
THIS is a three-fold robe—waterproof, wind proof and cold proof—a trinity which is one calculated to make the autoist "sit up and take notice." This robe is made of two layers of wool fleece cemented together by a layer of pure rubber, which renders it impervious to wind, cold, rain, or snow. What more could one ask? In a way it is a substitute for the fur robe, for it possesses the quality of warmth, and this without that of bulk or unwieldiness, which is assuredly a point to be considered by automobilists. The regular size of the robe is 60 × 68 inches, but individual sizes, as 54 × 48 inches, may also be procured, while special styles or sizes are also procurable. The edge finish is a fine felt binding. It is an all the year round robe. [Draper Brothers Co., Canton, Massachusetts.]


THE "DRAPER" AUTOMOBILE ROBE.

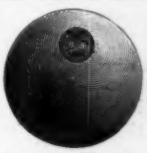
INDOOR SHOT AND RUBBER QUOITS.

PUTTING the shot is an exercise that requires study, patience and quick muscular action. In order to work with any skill every muscle of the athlete's body must work in unison, and every preliminary movement must be so studied and timed as to give concentrated power to the final movement when the shot leaves the hand. The first thing to learn always is how to hold the shot in the hand, which requires much care, as the weight should be thrown on the base of the three fingers and that part of the palm, the thumb and little finger acting only as a support to prevent the shot from falling. It will be seen, therefore, that the exercise can be made interesting and enjoyable. By the way, putting the shot is by no means confined to professionals, but is indulged in quite generally indoors, and rubber covered shot made according to scientific principles with a rubber cover that is perfectly round, gives a fine grip and has the proper resiliency when coming in contact with the floor. They will wear longer than leather covers and there is no opportunity for the lead dust to sift out, and therefore no loss of weight.

In the game of quoits, too, so popular both indoors and out, the rubber quoits have their place; made of the best Pará rubber they are durable and satisfactory and are very widely used. The loaded rubber quoits will not slide or roll and are especially adapted to indoor use. They come four in a set, five pounds in weight. [A. G. Spalding & Brothers, No. 124 Nassau street, New York.]

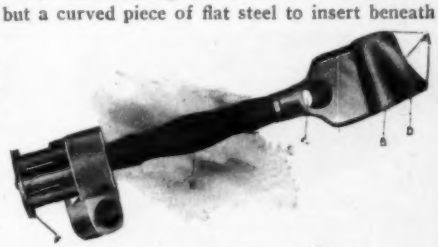


RUBBER QUOITS.


INDOOR SHOT.

THE "MINUTE" TIRE TOOL.

THIS tire tool, known as the New "Minute," is for clincher tires over 3½ inches. In removing a tire with this simple tool there is nothing but a curved piece of flat steel to insert beneath the tire, thus reducing the work of taking off a tire to a process of extreme simplicity, while permitting of a high degree of speed. The rollers are only used for replacing the tire. A special feature of this tool is that no part can touch the inner tube, hence any stretching of the tire is an impossibility. Sufficient faith in the little appliance to guarantee the removal or replacing of the largest shoe without effort, even if rusted to the rim, in a single minute, seems to bespeak for it a wide degree of popularity. This, in fact, has already been accorded it at the various exhibitions during the year. The tool may be used for all sizes of tires. [Long & Mann Co., Rochester, New York.]


THE "MINUTE" TIRE TOOL.

THE "EMPIRE" TUBE CASE.

ONE of the most convenient tire accessories brought out lately is the "Empire" Air Tube Case. It is made in four sizes and is so shaped that it fits the tube very snugly. Apart from its convenience, it is gotten up in natty style, which makes it otherwise worth while to carry about. All drivers carry an extra tube, and if it is to be kept in good condition some protection must be provided for that purpose. This case serves that end excellently, and when ready for use the tube is fresh and clean. [Empire Automobile Tire Co., Trenton, New Jersey.]

"EMPIRE" TUBE CASE.

RUBBER AIR CUSHION RECEIVER CAPS.

THE rubber air cushion receiver caps, for telephone receivers, shown in the illustration, are a genuine comfort, the rubber being so much softer than the bare, hard rubber shell that they are designed to cover. Moreover, they aid greatly in keeping out distracting noises, so closely do they fit the ear. Not alone in places of business are these cushions becoming a part of the office fixtures, but in the telephone offices themselves are they used extensively on the headband receivers for switchboards, where the receiver is held to the ear by a steel band. A device of this sort, while it adds greatly to comfort, is also going to prove a time saver in serving to lessen the annoyance of repetition, which so often has to be demanded where there is much commotion. [The Holtzer-Cabot Electric Co., Brookline, Massachusetts.]

RUBBER AIR-CUSHION RECEIVER CAPS.

INTERCHANGEABLE RUBBER HEEL.

A NEW article at once simple, convenient, and desirable is the Colditz Interchangeable Top Lift and Rubber Heel. Owners of shoe repair shops have estimated that the average pair of boots or shoes is repaired three times at the heel, which adds from $1 to $1.50 to the original cost of the shoe. Extra lifts purchased with the shoes are less expensive than cobblers' charges, and the economy of the Colditz device is enhanced by the fact that it makes possible an exchange from the left shoe to the right when worn on the side, so that the wear is equalized. The interchangeable device consists of two corresponding plates, of which one has a spring that interlocks itself when adjusted in place to keep the heel from displacement. It is released by inserting a pin through a small aperture, and is made of such a design that it is closed entirely when in position. When thus in position no projecting parts are shown, all being enclosed in the leather. Those who do not like rubber heels because of their noiseless walk, and others who consider them dangerous after they become worn, may be interested to know that by this attachment the leather lift may be placed outside of the rubber, and any objectionable features removed. [H. M. Colditz, P. O. Box 1578, Boston.]

COLDITZ INTERCHANGEABLE HEEL.

COLDITZ INTERCHANGEABLE HEEL.

COLDITZ INTERCHANGEABLE HEEL.

THE "IDEAL" ROBE.

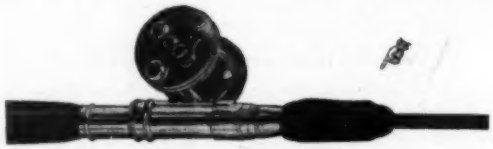
THIS robe, designed for the auto driver, appears to have many advantages. In the first place, it has a separate place for each foot and is so constructed that the foot levers can be used while the robe is worn without the slightest impediment to dexterity of movement. This, too, is done in full view of the driver. When it becomes necessary to remove the robe the operation is instantaneous, there being no possibility of entanglements. Besides using the lever with perfect ease, the operator can walk in the robe, if he so desires, there being ample leg play. The sensation of slipping, so often felt when one is wrapped in a robe, is averted, as the strap attached can be fastened around the waist. Protection for the feet is assured by rubber soles, or foot bottoms. As it is made in one piece it is impossible for wind and water to get under it. The robe can be made in colors to match the car; those kept in stock are plain black rubber cloth, check back rubber cloth, tan color mackintosh, imitation leather, green face, drill back and cloth with check back, waterproof. [Louis Dusenbury, Nos. 396-398 Broadway, New York.]

"IDEAL" MOTOR LAP ROBE.

RUBBER REELING AND ROD GRIP.

ALL good fishermen are on the alert for the best equipment, and they have the reputation generally of knowing a good thing when they see it. Perhaps this acumen comes in part from studying the habits of their finny brothers—perhaps not; at any rate, there are lessons to be learned from the elusive inhabitants of the water, for those who are willing to learn. But about the grip; the bait caster will be interested in this new attachable, corrugated, elastic rubber affair. It will stretch to fit any steel or wood bait casting rod, requiring no glue or cement, and can be placed on the rod in three seconds. It is as soft as a glove to the hand and at the same time affords a vise like grip. When on the rod it is 1 by 2¼ inches. It is made in dark gray and red soft rubber. [The Coller Rubber Grip Co., Coldwater, Michigan.]

"COLLER" RUBBER GRIP.



GRIP ATTACHED TO ROD.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JULY 2, 1907.

NO. 858,383. Machine for manufacturing insulating tubes. E. Haefely, Basel, Switzerland, assignor to Westinghouse Electric and Mfg. Co., Pittsburgh, Pa.

858,384. Manufacture of insulating tubes. *Same.*

858,385. Method of making insulating tubes. *Same.*

858,386. Apparatus for manufacturing insulating sockets. *Same.*

858,387. Tube making machine [for insulation work]. *Same.*

858,451. Machine for making insulating tubes. *Same.*

858,406. Apparatus for vulcanizing rubber goods [particularly pneumatic tires]. T. Midgeley, Hartford, Conn.

858,424. Tire protector. E. B. Stimpson, New York city.

858,452. Spare tire case. A. H. Kinder, Roxbury, assignor to F. B. Hopewell, Newton, Mass.

858,795. Cushion tire wheel. J. M. Davidson, Pittsburgh, Pa.

858,996. Nasal douche. L. J. Lamport, Cape Town, Cape Colony.

858,976. Heel. E. Guilman, Biddeford, Me.

858,911. Pneumatic cleaner. A. Richter, Gorches, France.

858,883. Hose holder. C. L. Lindsay, Spokane, Wash.

858,848. Heating pad [with pocket of rubber cloth for inclosing the jacket and its contents]. J. E. Allison, assignor to C. R. Judge, both of St. Louis.

858,817. Spring wheel [with rubber tire]. E. L. Morgan, St. Louis.

858,769. Spare tire holder. C. W. Warren, Middletown, Conn.

858,710. Appliance for motor vehicle wheels to prevent skidding and side slip. W. H. Ellam, Anerley, assignor of one-half to E. T. Ellis, Croyden, England.

858,665. Waterproof stocking [of cotton, rubber and wool layers]. J. I. Mullen, Pittsburgh, Pa.

858,612. Rollers for belt conveyors. E. J. Mason, assignor to Heyl & Patterson, Inc., Pittsburgh, Pa.

858,609. Belt guide and shifter. R. J. Lee, Panola, Ill.

858,575. Hose coupling. C. A. Claflin, Medford, Mass.

858,565. Overshoe. N. P. Bowler, Cleveland, O.

858,550. Hot water bag or bottle. R. A. Whall, Reading, Mass., assignor of one-half to Metropolitan Air Goods Co.

859,047. Stopper for hot water bags. G. W. Clayton, Mannington, W. Va.

859,157. Chloroform dropper. B. A. Warren, La Salle, Colo.

859,124. Method of ornamenting candy. [Involving a rubber bulb.] H. E. Short, New York city, assignor to Eureka Mfg. Co.

859,125. Method of ornamenting candy. *Same.*

859,116. Machine for winding balls. [Relating to golf balls.] A. T. and G. H. Saunders, Akron, Ohio.

859,091. Battery cell. A. H. Marks, Akron, Ohio.

859,067. Woven fabric [for suspenders and the like]. V. H. Jennings, assignor to Mills Woven Cartridge Belt Co., both of Worcester, Mass.

859,069. Tire. [Composed of transversely arranged sections of rubber and leather, and a covering for the sections, said covering being vulcanized to the rubber sections.] E. Kempshall, assignor to Kempshall Tire Co., both of Boston.

859,070. Tire. *Same.*

859,071. Tire. *Same.*

859,072. Tire. *Same.*

859,073. Tire. E. Kempshall, Boston.

859,074. Armor for tire. *Same.*

859,075. Tire. E. Kempshall, assignor to Kempshall Tire Co., both of Boston.

859,076. Composite tire section. *Same.*

859,077. Method of making tires. *Same.*

859,078. Tire. *Same.*

859,079. Method of making tires. *Same.*

859,066. Anchor packer. C. M. Heeter, Butler, Pa.

859,010. Machine for winding a wire or other protector around a flexible hose pike. J. Parris, Kensington, Victoria.

Trade Mark.

27,727. Shawmut Tire Co., Boston. The word *Shawmut.* For vehicle tires.

ISSUED JULY 9, 1907.

859,236. Air brake hose coupling. C. Maier and F. Sanford, Jersey City, N. J.

859,253. Packing. C. Restein, Philadelphia.

859,254. Cow milker. J. Ripczinske, Wassau, Wis.

859,378. Ball. [Toy.] C. R. Fleischman, Chicago.

859,519. Driving belt and rope. [Fabric treated with caoutchoucin and other materials.] Bruno Reichelt, assignor to Challenge Belt Co., Hoboken, N. J.

859,533. Vaginal Syringe. J. Wallace, assignor of one-half to W. J. Smith, both of Providence, R. I.

859,538. Rubber heel. C. C. Beebe, assignor of one-half to T. G. Richards, both of North Brookfield, Mass.

859,539. Process of making rubber heels. *Same.*

859,546. Coupling for hose and pipe. J. M. Davidson, Pittsburgh, Pa.

859,607. Wheel with elastic spokes [and rubber tire]. P. Lamure, Bois-Colombes, France.

859,609. Packing for piston rods. L. H. Martell, Ellwood City, Pa.

859,631. Pneumatic tire. C. B. Tully, New Haven, Conn.

859,711. Device for applying medicaments. [With hollow teeth and a rubber bulb.] S. A. Winsor.

859,758. Horseshoe [with heel cushion]. F. B. Gardner and J. E. Grosjean, assignors to the Humane Horseshoe Co., Lima, Ohio.

859,759. Vehicle tire. [Pneumatic.] A. W. Getchell, Cleveland, Ohio.

859,856. Vehicle tire. [Pneumatic, with studded tread.] C. E. Titus, Springfield, Mass.

Reissue.

12,671. Method of forming inner tubes for tires. A. H. Marks, Akron, Ohio. Original No. 842,217.

Trade Marks.

The B. F. Goodrich Co., Akron, Ohio. The following, for working the kinds of goods specified:

28,103. The word *Goodrich.* For belting and hose.

28,104. The word *"Pilgrim."* For belting.

28,105. The words *Rob Roy.* For belting.

28,106. The word *Marathon.* For belting.

28,106. The word *"Cycle."* For belting.

28,109. The word *Akron.* For hose.

28,110. The words *White Anchor.* For hose.

28,112. The word *Cascade.* For hose.

28,113. The word *Triton.* For hose.

28,114. The word *Deluge.* For hose.

28,116. The outline of a locomotive boiler. For hose.

28,118. The word *Quarry.* For hose.

28,119. The word *Chieftain.* For hose.

28,120. The words *North Star.* For hose.

28,121. The word *Planet.* For hose.

28,122. The word *Meteor.* For hose.

28,123. The word *Solar.* For hose.

28,124. The word *Alarm.* For hose.

28,125. The word *Jupiter.* For hose.

28,126. Outline drawing of a locomotive and train. For hose.

ISSUED JULY 16, 1907.

859,936. Gravity hose coupling. E. E. Gold, New York city.

860,003. Means for indicating the deflation of tires. Harry B. Williams, New York city.

860,054. Hose nozzle. George Pecover, Colorado Springs, Colo.

860,133. Wheel [with flexible tube around the hub and means at the rim for holding a cushion tire]. J. Hippisley, Trenton, N. J.

860,136. Life saving garment. T. F. Hoyt, Seattle, Wash.

860,263. Apparatus for molding crescent fillers for tires. W. F. Stearns, Batavia, N. Y.

860,443. Lawn sprinkler. C. C. Cheney, San Jose, Cal.

860,529. Hose coupling. C. C. Corlew, Fresno, assignor of one-half to L. A. Spencer, Oakland, Cal.

860,555. Dental syringe attachment. W. C. Middaugh, Easton, Pa.

860,589. Game ball. S. E. Wharton, Everett, Wash.

860,591. Uterine supporter. W. T. Baird, El Paso, Tex.

Trade Mark.

26,854. Inter State Rubber Co., Omaha, Neb. The word *Chief,* under the head of an Indian.

ISSUED JULY 23, 1907.

860,656. Rotary packing device. F. L. Gregory, Chicago, assignor to Gregory Rotary Engine Co.

860,720. Manufacture of packing. [Relates to the winding of rubber, canvas, and other material into cylindrical form.] L. E. Adams, Philadelphia.

860,743. Vacuum receptacle cover. [With edge of elastic packing material.] W. Haaker, Verona, N. J.

860,751. Vulcanized fibrous composition. [An artificial leather composed of scrap rubber, scrap leather, and the like.] J. W. Kumph, Danvers, Mass.

860,891. Supporting and retaining means for tires. W. A. Allen, New York city.

860,468. Water bottle stopper. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York city.

861,115. Combined bust form and arm pad. Dora Harrison, Lansing, Mich.

861,127. Packing for pumps for oil wells, etc. [A series of flexible balls.] F. M. Kleckner, Caney, Kans.

861,148. Billiard cushion. O. E. Smith, Chicago.

Trade Marks.

18,489. The Diamond Rubber Co., Akron, Ohio. The letter *D*, enclosed in a diamond shaped border, on either side of a *fleur-de-lis*. For gaskets, packing, hose, and the like.

26,441. The Diamond Rubber Co., Akron, Ohio. The letter *D*, enclosed in a diamond shaped border, on either side of a *fleur-de-lis*, all the details differing somewhat from those in No. 18,489. For tires and other rubber goods.

28,272. Pequanoc Rubber Co., Butler, N. J. The word *Imperial*. For reclaimed rubber.

28,273. Pequanoc Rubber Co., Butler, N. J. The word *Crown*. For reclaimed rubber.

28,274. Pequanoc Rubber Co., Butler, N. J. The word *Rex*. For reclaimed rubber.

28,399. Pequanoc Rubber Co., Butler, N. J. The head of an Indian. For reclaimed rubber.

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the Application, which in the case of those listed below was in 1906.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 26, 1907.]

5,298 (1906). Pneumatic tire, with puncture preventing hoop of steel. A. Hewer, Bootle.

5,311 (1906). Detachable tire carrying rim. M. A. Lemercier, Paris, France.

*5,363 (1906). Supporting device for conveyor belts. A. J. Boult, London, (C. H. Anderson, Chicago, Illinois.)

5,356 (1906). Pneumatic tire with non skidding rivets or studs. Continental Caoutchouc- und Guttapercha-Compagnie, Hanover, Germany.

5,402 (1906). Draught excluder for doors. R. Schwartz, London.

*5,421 (1906). Paint spraying device. L. Walkup, Rockford, Illinois.

*5,466 (1906). Pneumatic tire with incorporated knitted fabric. H. T. Bragg, Yonkers, New York.

5,486 (1906). Rubber articles, as tire treads, made from vulcanized rubber waste by submitting the finely powdered material to great pressure in heated molds. Michelin et Cie., Clermont-Ferrand, France.

5,487 (1906). Pneumatic tire with non skidding studs. A. D. Shuter, Hampstead.

5,578 (1906). Hair curler of vulcanite or the like. A. Morelle, London.

5,586 (1906). Troughing rollers for conveyor belts. W. Hepburn, of F. Reddaway & Co., Ltd., Manchester.

5,633A (1906). Solid rubber tire, with the base strongly compressed. T. B., A. G., and G. P. Marchant, London.

5,668 (1906). Horseshoe treads. J. Rottkamp, Cologne, Germany.

5,677 (1906). Building up of covers for pneumatic cushions for vehicle wheels. A. F. Hawksley, Fairhaven.

5,681 (1906). Non slipping device for pneumatic tires. W. T. G. Ellis, Glasgow.

5,735 (1906). Detachable tire carrying hollow rim. C. W. Griffiths, London.

*5,752 (1906). Spring tire of metallic sections, with rubber tread. W. J. Paton, Kansas City, Missouri.

5,771 (1906). Teat cup for cow milking machine. A. Gillies, Victoria, Australia.

*5,791 (1906). Pneumatic pulsator for cow milking machines. D. Klein, West Chester, Pennsylvania.

*5,792 (1906). Rubber plug and nipple for bottles, to render them non refillable. A. A. Boschelli, Harrisburg, Pennsylvania.

5,789 (1906). Non slipping tread for pneumatic tires. A Ménégault, Arcueil (Seine), France.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 3, 1907.]

5,994 (1906). Golf club heads filled with rubber. G. Legh, King's Lynn, Norfolk.

6,040 (1906). Chain non slipping device for pneumatic tires. J. Cummins, Southport.

6,078 (1906). Pneumatic tire with woven wire layers between the inner tube and cover. W. Harrison, Carlisle.

6,133 (1906). Bottle cap stopper with rubber ring. J. O. Comrie, Glasgow.

6, 183 (1906). Preservative composition for rubber goods. [Mixture of albumen, gelatine, glycerine, and glyceryl triacetate; for application to coach builders' varnish, and the like.] E. Granier, Paris, and E. L. Froger-Delabierre, Grasse, France.

6,064 (1906). Pneumatic tire with compound chain for protective purposes. A. Watkinson, West Kensington.

*6,099 (1906). Apparatus for detecting defects in the insulation of wires. A. J. Boult, London. (S. W. Wardwell, Providence, Rhode Island.)

*6,097 (1907). Controlling device for winding and unwinding insulated wire. A. J. Boult, London, (S. W. Wardwell, Providence, Rhode Island.)

6,094 (1906). Cow milking machine. W. Clark, London. (Hydraulic Hand-Milker Co., Wellington, New Zealand.)

6,202 (1906). Pneumatic tire rendered non slippable by studs or bolts. S. Butler, Bristol.

6,254 (1906). Tire composed of a number of separate rubber blocks, supporting renewable studded leather pads. G. H. Mann, Leeds.

6,361 (1906). Composite solid and cushion tire, adaptable to any rim. T. Lawson, Carlisle.

6,383 (1906). Solid tire, with rim having a detachable flange. J. A. Faesen, T. C. Dentz, and R. A. L. Lehmann, Amsterdam, Holland.

6,427 (1906). Pneumatic tire with puncture preventing band of canes imbedded in rubber. F. J. Harden, Barnes, Surrey.

6,445 (1906). Sound insulators for railway and motor cars, composed of waterproofed felt in alternate layers with rubber sheets or rubber waste. C. A. McKerrow, Manchester, and two others.

6,457 (1906). Air tube for pneumatic tires, with closed ends. J. E. Rogers, Smethwick, near Birmingham.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JULY 10, 1907.]

6,535 (1906). Portable bridge supported on rubber pontoons. H. Kaiser, Essen-West, Germany.

6,560 (1906). Pneumatic tire with automatic indicator of deflation. E. B. Waggett, London, and another.

*6,576 (1906). Vacuum cleaning apparatus. F. Golby, London. (E. I. Nichols and A. D. King, San Francisco, California.)

6,624 (1906). Motor tire of steel springs in a canvas sleeve, with rubber cover. F. A. W. Bode, London.

6,664 (1906). Waterproof lining for leather boots. H. F. Karth, Hamburg, Germany.

*6,684 (1906). Artificial limb, with cover of rubber and fabric. J. K. S. Farris, Saltville, Virginia.

6,714 (1906). Respirator for firemen's dress. R. K. Catt, Melbourne, Australia.

*6,811 (1906). Hernial truss. F. Serio, New York.

6,862 (1906). Pneumatic tire with studded tread band. H. Renouard and J. MacGuinness, Suresnes, France.

6,880 (1906). Brushes for motor 'buses, to prevent tire slipping. A. and G. Lutz, London.

6,883 (1906). Horseshoe tread. L. Wolff, Düsseldorf, Germany.

6,887 (1906). Tire distended by means of liquid material. T. Gare, New Brighton.

6,973 (1906). Pneumatic tire with chrome leather studded band. J. Scott, West Hartlepool.

7,017 (1906). Vehicle wheel with inner and outer felloes, with intermediate springs, the whole covered by rubber or leather bands. B. Jones, London.

7,048 (1906). Pneumatic tire with studded leather tread. H. J. Joscelyne, London.

7,063 (1906). Tire vulcanizing apparatus in segments. W. H. Welch and H. Frost & Co., London.

7,066 (1906). Electrically heated portable tire vulcanizer. *Same.*

7,095 (1906). Fountain pen. F. W. Knight, Birmingham.

7,155 (1906). Spring wheel having a rim formed of two annular sections, with an intermediate buffer of rubber. P. Lamure, Paris, France.

7,163 (1906). Boot heel cushioned with pneumatic or solid rubber balls. A. F. Berry, Ealing.

7,173 (1906). Wheel with flexible rim adapted to hold rubber facing blocks. G. Floquet, Paris, France.

7,194 (1906). Wheel for gun carriages, with two or more rims or tires side by side. S. T. Richardson and R. Price, Birmingham.

7,207 (1906). Composite [cushion and solid rubber] tire. F. S. Bull, Sheffield.

7,209 (1906). Self closing valve, to prevent water waste, involving a pneumatic bulb and rubber diaphragm. A. Bruce, Glasgow.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION).

372,798 (Dec. 21, 1906). C. Jenatzy. Dismountable wheel rim.

372,838 (Dec. 22). Marc and Dunal. Pneumatic wheel.

372,861 (Dec. 22). L. Mangold. Penumatic tire protector.

372,917. (Dec. 26). J. V. Meng. Insulation for wires and method of manufacture.

372,771 (Jan. 28, 1907). Grancer and Froger-Delapierre. Compound for rubber designed to conserve its elasticity.

373,075 (Dec. 29, 1906). Deditius. Protective device for tires.

373,252 (Dec. 31). De Talleyrand-Perigord de Sagan. New fabric for tire covers.

373,264 (Dec. 10). Brossard. Multiple air tubes for pneumatic tires.

373,054 (Dec. 28). T. Midgley. Apparatus for vulcanizing tires.

373,122 (Dec. 31). Siline, Brounoff and Romann. Improvement in rubber footwear.

373,276 (Jan. 2, 1907). C. E. Julien. Method of holding on dismountable wheel rims.

373,279 (Jan. 2). Colombati. Pneumatic tire covers.

[NOTE.—Printed copies of specifications of French patents may be obtained from R. Bobet, Ingenieur-Counseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

Fruits That Yield Rubber.

IN view of the successes attained recently in systematic rubber culture, and of the still large yield of forest rubber, it may appear to some to be an extreme view to suggest that trees and giant creepers may not always serve as the world's main dependence for its rubber supply. Not that any rubber trees now standing are in danger of being neglected; they will be drained of the last drop of latex, even if this involves the destruction of the trees. But what about the future? Does it give promise of the development of new sources of rubber, through the evolution of plants now considered as minor and even insignificant rubber producers? Already the study has been begun of "quick crops" for the production of rubber, as succulent stalks or tubeis. And students of comparative agriculture cite in this connection the instance of the sugar supply, which was derived first from trees, then from juicy stalks, and now most largely from the beet root.

An ideal rubber plant, if such could be found, would be one from which the product could be gained in the shape of fruits, without injuring the tree, as grapes or apples are gathered. In the light of recent experiments in vegetable evolution, this field seems well worth investigating, because there are known already several species of rubber bearing fruits whose yield is considerable and appears to be capable of a rapid development.

There are bananas and grapes which yield a small amount of rubber. The banana rubber process was patented in 1896, but the yield is not large enough to compete with the food qualities of the fruit, though the rubber might perhaps be exploited as a by product in making banana flour. The latex is 95.7 per cent. water and 3.9 per cent. rubber, and it is easily coagulated by boiling.

A much better known instance of fruit rubber is found in the Mexican chicle (*Achras sapota*), which yields the chewing gum of commerce. The chicle gum usually contains from 35 to 55 per cent. of resin, and about 18 per cent. of rubber. This product is obtained by tapping the tree, but the best gum comes from the fruit. This fruit is about the size of an apple or osage orange, and, like the osage orange, is quite full of milk. This milk is coagulated by gentle boiling. When freshly clotted, the gum forms a tough, white, aromatic, and rather elastic mass, which later becomes friable.

Tabernaemontana Donnell Smithii (Rose) is another Central American and Mexican fruit, which yields what may be termed a blend of rubber and gutta-percha. It is an *Apocynacea*, called "cojon de puerco" by the natives. The tree seems to be found in West Africa, also, and it has been cultivated in Kamerun, though the size of the fruit is disappointing. *Tabernaemontana* is a shrub or dwarf tree, often used as shade for coffee. It bears fruit at four years old. The latex is coagulated with lemon juice or brine, making a yellowish curd which is kneaded like gutta-percha.

A recently discovered and still unclassified Mexican rubber fruit is the "papelillo," which grows abundantly in the states of Guanajuato and Michoacan. Samples of the rubber are now being tested in the United States and Europe.

An interesting fruit tree comes from São Thomé, Africa, from a private experimental garden at Porto Allegre. The tree itself does not yield rubber, but the fruit, which is as large as an orange, is said to be rich in latex. The gum shows 23.8 per cent. of substance insoluble in hot acetone, which would almost fit it for immediate use as a gutta.

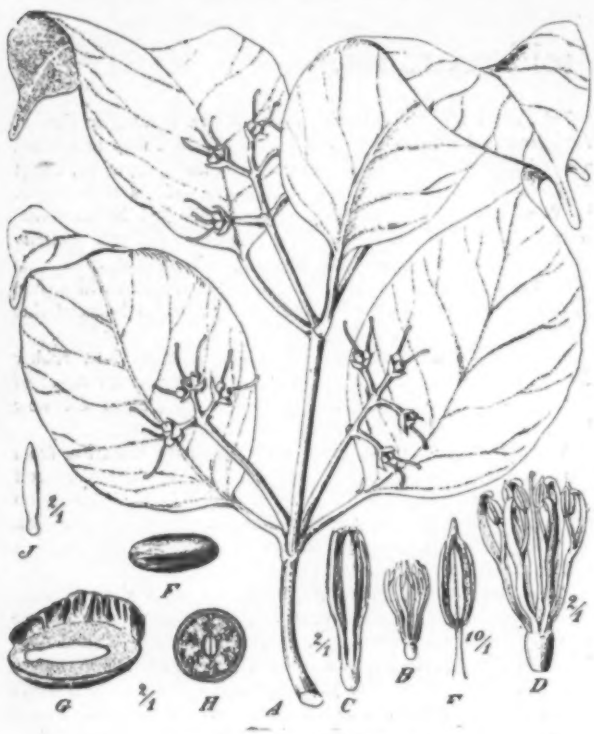
Africa furnishes numerous rubber and gutta fruits. A Zanzibar fruit is said to yield considerable gutta, but details are wanting. *Marsdenia verrucosa*, a Madagascar vine, called "bokabe" by the natives, appears to be a promising rubber source. The fruits ripen in May or June, and 200 of them yield a quart of milk, on an average. The fruits are merely sliced and allowed to drip. Better extraction methods might secure a larger yield of latex.

Cryptostegia Madagascariensis, or "lombiry," contains milk both in the fruit and the stem. The fruits are smaller, 1000 being needed to get a quart of rubber latex, which is curdled by adding tamarind juice and boiling. *Landolphia spherocarpa*, or "ariabo," another Madagascar vine, has rubber bearing fruits, but the vine itself is more important as a rubber source.

Karite gum or "gutta-shea," has been known to the trade for 30 or 40 years, and yet the reports from it are conflicting. It is commonly ascribed to the fruit of *Bassia Parkii*, or *Butyrospermum Parkii* (Kotschy), a West African *Sapotacea*. It was for many years believed, on the authority of Dr. Heckel, that the gutta came from the trunk, while the butter was derived

RUBBER YIELDING MISTLETOE.
[*Strutanthus syringifolius* (Mart.), or "tina macho," growing upon its host. Native to Brazil, Venezuela and the Guianas. The large berry variety, and the most important of the rubber mistletoe species.]

ANOTHER VIEW OF THE SAME PLANT.
[Showing the method of fastening to a bough.]



RUBBER YIELDING MISTLETOE.

[*Strutanthus syringifolius*, or large berry mistletoe, showing the relative size of berry, leaf, and blossom. Sections of the berry show the rubber wrapping about the seed.]

from the fruit. Later researches point to the fruit as the source of both. Some authorities regard the Karite gutta as of good quality, being 92 per cent. pure; while others, like Fendler and Heim, seem to consider the gum worthless as a substitute for gutta-percha. The butter gutta-gum forms about 30 per cent. of the fruit, and contains, on the average, 25.20 per cent. gutta, 57.13 per cent. resin, 5.04 per cent. water and 12.63 per cent. impurities. When fresh it is yellowish, smells and tastes like cocoa butter, and is extensively used as food by the Africans. The edible fruit ripens in June or July, and looks much like a green plum, having one large seed, from which the butter is made.

Two shrubs, *Abractylis gummifera*, of Sicily, and *Alstonia Durkheimiana*, of New Caledonia, yield a remarkable amount of rubber like material in their blossoms, but nothing is known about the fruit of *Alstonia*, though every other part of the tree is milky.

Eucomia ulmoides, sometimes called a *Trochodendracea* and sometimes a *Hamamelidacea*, and even classed as a *Euphorrbiacea*, is a hardy Chinese shrub, which appears to be an extremely promising source of a gum having some of the properties of both rubber and gutta-percha. The plant is called "tu-tschung" in China, where it is cultivated for certain medicinal purposes. The shrub has been known in Europe for about 15 years, and grows out of doors through the winters of northern France. The whole plant is saturated with latex, and the fruit contains 27 per cent. of the gutta like gum. Under a system of careful selection this plant should become a valuable plantation crop, if numerous reports are to be trusted. Its capacity to bear a temperature of 18° F. should suit it for cultivation over a large part of the temperate zones. The best method of propagation is from slips or cuttings, seeding being rather uncertain.

We might now speak of the very considerable rubber content of the fruit of better known rubber trees, especially *Hevea*, *Hancornia*, and *Castilloa;* but these species are of far more importance for tapping. The fruit crop is too small in proportion to the size of the tree, the tree is too large to be handled as a fruit or orchard tree, and besides that the present purpose of the writer is to eliminate the tree as far as possible.

Several other tropical American trees yield fruit rubber, and it may be worth while to mention a few of these. "Pepino do mato" bears great numbers of cucumber like fruits, which are full of milk and yield an inferior rubber like material. The tree is rather small, which is well. "Coxinduba" is a middle sized tree, which contains milk in both fruit and trunk.

"Ucuhuha branca" or *Virola Surinamensis*, and "ucuhuha vermelha," or *Virola sebifera*, two trees of the *Myristicacea* family, contain an abundance of thick, reddish milk in their bark, and the fruit yields a valuable wax, when chopped and boiled. "Assacu-miri" or "arvoeiro," is a small, thorny tree, whose trunk, flowers and fruit yield a poisonous milk containing an inferior gum.

Some of the South American mistletoes have lately attracted considerable attention for their rubber bearing fruit. These *Loranthaceae* include several genera, scattered over all tropical America, and growing at all altitudes up to 5,000 feet. Warburg's classification, according to the size of the berries, has been quite generally accepted.

Strutanthus syringifolius (Mart.) has the largest berries and is the richest in rubber. The berries are about half an inch

ANOTHER SPECIES OF MISTLETOE.

[*Phthirusa theobromae* (Eichl.), or middlesized berry, showing berries, tendrils and seizure of a bough. This mistletoe ranks next in importance to *Strutanthus syringifolius*.]

long, shrink slightly, and lose about half their weight in drying. When fresh, the latex is expressed from the berries and coagulated; but when the fruit is dried, the nearly pure rubber is found as a wrapping around the seed, this wrapping being red or yellow, according to the variety. Warburg fixes the rubber content at 27 per cent. of the dry fruit. Fendler got 15 per cent. of rubber and 11 per cent. of resin, or 26.37 per cent. of gum from the dried berries. Marckwald and Frank got 23.6 per cent. of about equal parts rubber and resin, or about 13 per cent. of pure rubber from the dry fruit. Roversi and Knoop got 18 to 21 per cent. of pure rubber. There are reports of single trees which have yielded 250 pounds of dry fruit. This mistletoe is to a large extent an air feeder, and grows best on the "guamo" or "inga" tree, which is extensively used as coffee shade, particularly in Venezuela.

What has been said of *Strutanthus syringifolius* applies, in the main, to *Strutanthus marginatus* (Bl.), another mistletoe, though its berries are somewhat smaller.

Phthirusa theobromae (Eichl.) bears "middle sized" berries, which are not so rich in rubber as the above. It grows on guamo, aguacate, mango, cacao, oleander, and coffee trees, besides several hedge plants, and on several rubber trees, as well as cassava or *Manihot utilissima*. The berries grow in thick clusters, and Knoop thought that their yield of rubber would be more valuable than the coffee crop itself. Since then the price of rubber has risen much faster than that of coffee. This mistletoe is quite vigorous, throwing out tendrils to seize and tap neighboring branches.

There are a number of small berry mistletoes, such as *Phthirusa pyrifolia* (Eichl.), *Phoradendron rubrum* (Griseb), *Phoradendron giordanae* (Warb.), *Phoradendron Knoopii* (Warb.), and *Strutanthus Roversii* (Warb.), with some less known kinds, all of which produce some rubber. Besides these, there are other mistletoes which produce viscin, birdlime, and Japanese wax, the last being usually accredited to the fruit of several *Rhus* species.

Mistletoe may be propagated either by sticking a seed in a crevice of bark or by tying a tendril twig upon the branch of a suitable tree. The plants get their growth in two years. They are all more like orchids than true parasites, and they might be made to grow even on frames or trellises. The rubber content is exceedingly high, the fruit is abundant, and, being such a quick grower, the plant is capable of a great and rapid improvement, in the hands of the scientific gardener.

COTTON IN THE CENSUS.

BULLETIN 74 of the United States census of manufactures (1905) relates to the textile industry, including the cotton branch. The production of cotton goods is shown to have increased largely since 1900, though the increase appears not to have extended to cotton duck. The following comparison is given of the production (in square yards) of duck other than "sail":

Census of 1900	117,483,925
Census of 1905	113,014,603

The bulletin contains nothing bearing upon the probable cause of the reduced production of duck. Some figures appear in relation to the cost of raw cotton. The average cost per pound to the mills, in 1905, of the different classes is stated as follows:

Sea Island	19.45 cents.
Egyptian	17.38 "
Domestic, other than Sea Island	11.62 "

The average cost of domestic cotton in the census of 1900 was stated at 6.67 cents per pound.

COTTON PICKINGS.

ELEVEN large cotton spinning mills at Manchester, England, were reported recently to have declared dividends for their last business year averaging 23 per cent. on their share capital.

Cotton planting in Corea is likely to be stimulated by the Japanese association of cotton growers, at whose instigation an expert in the department of agriculture of Japan has been carrying on experiments.

Cotton ducks are widely used in Australia for making tarpaulins and for blankets for horses and cattle. The English awning ducks now command the market.

A COLOMBIAN RUBBER MERCHANT.

THE fact that so much of the republic of Colombia remains undeveloped has not discouraged her government or the leading business men in their efforts to place the country upon the plane to which the natural resources would seem to entitle it. Much of Colombia is relatively difficult of access, but the mineral and vegetable wealth awaiting development is so vast as to keep alive the hope that ultimately foreign capital will be attracted on a scale which will bring about a new industrial era. The population is sparse, as well as wanting in capital for progressive undertakings, and transportation facilities are very limited as compared with those of many countries. At the same time there are not lacking merchants, mining proprietors, and planters whose enterprise is of the highest order, and whose success proves what may be done with the country's natural resources, when intelligent and determined effort is applied.

FIDEL CUELLO.

Fidel Cuello, the subject of the portrait herewith, is a native merchant who is typical of the class referred to. His business is located principally at Bogotá, the national capital, and at Neiva, the head of steamer navigation on the Magdalena river. Señor Cuello is the manager of the house of Caño, Cuella & Co., importers and exporters, with agencies at various points other than those named here, and correspondents in London. During 20 months recently the exports of this house reached the value of £65,086 19*s.* 4*d.* [=$316,745.73, gold], in addition to the purely domestic trade. The most important item of export was india-rubber, collected by Señor Cuello's house. Next came coffee, produced on his plantation; hides, gold, quinine bark, etc. In addition to his activity in business, Señor Cuello serves as the representative at the national capital of the *intendencia* of the Alto Caquetá.

Señor Cuello has been particularly interested in the development of the region drained by the rivers Putumayo (or Içá) and Caquetá (or Yapurá), both of which, rising in Colombia, flow into the Amazon. From the head of navigation on the former to the Atlantic seaboard is about 3,000 miles, but direct communication is possible, and the hope is entertained of developing this region by exploiting an extensive concession (of lands between the two rivers) held from the government by Señor Cuello and an associate. The president of Colombia, Señor General Raphael Reyes, has been deeply interested in seeing this region developed, since a number of years ago, he explored the Putumayo at his own expense from the source to the seaboard, demonstrating that it is navigable. The Caquetá region as a

source of rubber was treated in THE INDIA RUBBER WORLD as early as July 15, 1893, (page 307) by a relative of General (now President) Reyes, since which time considerable rubber has been exported from that part of Colombia.

The Amazon Colombian Rubber and Trading Co. (New York) have been incorporated to exploit the Putumayo-Caquetá concession, granted in 1905 to Caño, Cuello & Co. A report on this company in THE INDIA RUBBER WORLD of May 1, 1907 (page 260) elicited a statement from the Peruvian consul general in New York to the effect that his government considers part of the lands covered by this concession to be comprised in that territory which is disputed between Colombia and Peru. A director of the company, however, advises this journal that the *modus vivendi* between the two countries signed in Bogotá, September 12, 1905, several months after the granting of the concession by Colombia, obligates both countries to maintain the *status quo*, thus directly protecting the existing concession. Furthermore, during the arbitration of the dispute as to the lands lying principally to the south of the concession, all military posts and custom houses have been withdrawn, and both governments consent to the free navigation of the Putumayo. As the Amazon Colombian Rubber and Trading Co. have to do with about 20,000,000 acres of lands under their concession, and a larger extent of territory indirectly outside the concession, and as only a small part of the territory is in dispute with Peru, the operations of the company on a whole do not seem likely to be affected, no matter how the arbitration results.

* * * *

THE Amazon Colombian Rubber and Trading Co. have completed their organization by the election of Frank Squier, president; Herman D. Selleck, managing director; Colonel John Bidlake, secretary; and Julian M. Gerard, treasurer—all of New York. Among the other directors are Benjamin Briscoe, of the automobile trade; C. P. Collins, president Inca Rubber and Mining Co.; Fidel Cuello, of Colombia; and Houston M. Sadler, formerly of the United States Rubber Co., and now a member of the New York Stock Exchange.

THE RUBBER TRADE AT AKRON.

BY A RESIDENT CORRESPONDENT.

AS another evidence of the growth and importance of Akron as a tire center, announcement is made that the Buckeye Rubber Co. are about to erect an addition to their already extensive factory, which will almost double the concern's output. The object of the newest building venture is to add pneumatic tires to the company's products. The building now under construction is to be 250 × 40 feet, and will be of brick. The estimated cost of the addition is $25,000. The Buckeye factory is controlled by the Consolidated Rubber Tire Co. (New York), formed originally to exploit the Kelly-Springfield solid rubber tire.

As he was about to leave his office for the last time, Mr. Charles C. Goodrich, general superintendent of The B. F. Goodrich Co. until he resigned, a short time ago, was surprised by a delegation of a score of the factory's general foremen, who presented him, through Mr. T. Garrett, with one of the finest and most costly meerschaum pipes ever brought to this city. Mr. Goodrich left Akron the next day, and sailed from New York for Europe, where he will spend the remainder of the summer.

A conference of the branch managers of The Diamond Rubber Co. was held during the month in Akron, and 18 of the managers were in attendance. The guests were entertained at dinner at the Portage Country Club, Secretary W. B. Miller, of the company, officiating as toastmaster. The managers present were: H. J. Woodward and T. J. Smith, New York; E. H. Fitch and E. P. Weber, Philadelphia; W. P. Cronin, Boston; C. H. Smith and E. M. Anderson, Chicago; C. E. Matthewson and Don McKay, San Francisco; G. J. Bradley, Cleveland; H. L. Doyle and J. W. Paul, Pittsburgh; W. M. Periett and H. M. Cooper, Detroit; W. E. Roby, Minneapolis; H. C. Miller and W. E. Bailey, St. Louis; and M. E. Oliver, Buffalo, N. Y.

A new massive brick building to be used by The Diamond Co. for the installation of increased facilities for tire manufacturing is half completed.

At a special meeting of officers of the Aladdin Rubber Co., whose plant at Barberton was destroyed by fire a short time ago, it was determined to go ahead with the reconstruction of the plant. The new buildings will be erected on the same foundations, and an additional story will be added all through, to accomodate the new machinery to be installed. Secretary Gilbert has stated that the enlargement, as now planned, will have the effect of tripling the company's former output. The daily output of the reclaiming plant will be 100 tons of rubber.

Mr. W. J. Gorham, president of the Gorham Rubber Co. (San Francisco), was a visitor to Akron about the middle of August.

THE RUBBER TRADE IN SAN FRANCISCO.

BY A RESIDENT CORRESPONDENT.

TRADE has not been as active during the past two months as it should have been, considering the amount of building activity which is in progress, owing to the labor disturbances, but in spite of the general complaint which has been made from merchants in nearly all other lines of business, very little has been heard from any of the rubber houses. They have all been doing a fairly active business, and all look forward to a more active business during the latter part of August, and from then on when the regular fall business activity begins to open up. The crop reports from some sections of the interior are very good, while in some sections the yields will not be very large, but the prices on all products of the farming districts have doubled and trebled, which makes the net profits much greater than they were last season. Money is a little more plentiful than it has been for some time, collections are better and the improvement in the city's administration by the appointment of honest officers has shown beneficial results. Eastern money is beginning to come here again with the old time freedom.

R. H. Pease, of the Goodyear Rubber Co., is now enjoying his stay in Portland, Oregon, but he is not enjoying his new $6,000 Packard automobile. He sent the machine up by boat, but he shipped it on the ill-fated *Columbia* which went down with nearly all on board. He was fortunate, however, in that at the last moment he decided not to send his family on the *Columbia*, as he had at one time intended to do. At the local headquarters of the house the report is that business is keeping up well in all branches and that they are getting ready now for an active fall trade in rubber boots and shoes, of which they are laying in an enormous supply to meet the demand which the condition of the streets in San Francisco is expected to create during the coming rainy season.

The Graton & Knight Manufacturing Co., the belting people, have moved from their temporary quarters on Beale street to permanent quarters in a new fireproof building on Fremont street, between Market and Mission.

William Perkins, president of the Sterling Rubber Co., while on a vacation trip through Humboldt County met with a serious injury in a runaway accident. He is now fully recovered, however. He reports that in the country the rubber business is very good, although in this city it is still a little slow.

Mr. Kanzee, of the Phoenix Rubber Co., states that business in the mechanical lines is rather slow, although in the rubber tire line it is very good. Conditions in the city, he says, are not as promising as they might be, owing to labor disturbances, but they have found no trouble in increasing their business every month.

Mr. W. J. Gorham, of the Gorham Rubber Co., was down in Los Angeles during the last month looking after the firm's

branch store there, while his Los Angeles manager, Edward Helm, went on a combined business and pleasure trip to the Eastern states. Mr. Helm has now returned, and Mr. Gorham has gone on a flying trip to Akron, Ohio.

Work on the new three-story permanent building for the Pacific Coast Rubber Co. is progressing rapidly, and the firm expects to be located there by the first of October.

L. L. Torrey, manager of the local branch of the Pennsylvania Rubber Co., is now in Seattle looking after the business in the northern portion of the coast territory. The firm's San Francisco branch is being taken care of by Mr. Grant in the meantime, and is doing some very active work. The repair plant is nearly completed, and will be in full working order soon.

Mr. Bennett, of the Los Angeles Rubber Co., has returned from his Eastern trip, and passed through San Francisco on his way home.

Mr. Gregory, manager of the New York Belting and Packing Co., Limited, has gone East in the interests of the firm.

N. S. Dodge, of the Western Belting and Hose Co., arrived from his Eastern trip this week, where he has been securing new rubber lines for his firm, whose offices are at Nos. 31-33 Main street.

A new company has been formed, called the Pacific Mill, Mine and Supply Co., with offices in the Joshua Hendy Machine Works building, on Fremont street. Frank Steers and Earnest Folsom, formerly with the Graton & Knight Manufacturing Co., are the principal movers in the new concern.

R. J. McNeilly is now sales manager for Barton, Squires & Byrne, Inc. He has recently come directly from The Diamond Rubber Co., at Akron, Ohio. The firm is now well established in its new four-story building at No. 531 Howard street. The establishment is especially well equipped for making spiral ring packings and molded goods. It is their intention to install one or two new presses shortly.

G. G. Magill, representing the Central Rubber Co., of Chicago, has been in San Francisco recently making the rounds of the trade in the interests of his firm.

C. H. Chase, manager of Bowers' Rubber Works, has gone for a two months' business trip East. At the local store they report that they are not caught up with orders and have still two months' run ahead. The factory at Black Diamond is about completed in equipment and is able to turn out orders very fast. William Long has gone to Los Angeles for the firm for the purpose of opening a branch store in that city.

Joseph V. Selby has moved the offices of the Boston Woven Hose and Rubber Co. from the temporary quarters on Stuart street to a permanent location on Folsom and First streets.

The W. D. Newerf Rubber Co., Coast agents for the Goodyear tires, is now located at No. 506 Golden Gate avenue, San Francisco.

The Stevens and Elkington Rubber Co., dealers in tires principally, are located in new quarters at No. 526 Polk street.

IS THERE A NON-SLIPPING HORSESHOE?

THE pecuniary losses to horse owners, says the New York *Rider and Driver*, from injury to or the death of their animals after every snowfall, must be enormous. Moreover, the sufferings due to horses from such causes are distressing to humane spectators. In the opinion of the writer but little practical result has been attained in the way of developing a non-slipping horseshoe.

"The sole with a hard rubber artificial frog, either nailed on with the shoe, or, as seen mostly in London, slipped in with a pair of tongs when required, and removed at night for cleanliness' sake, is for saddle and light-harness horses satisfactory on ice and frozen snow. The absence of 'toe-hold,' however, makes this invention useless when there is any considerable load to pull. The same description applies to the rubber cleats projecting through the greater part of the shoe itself. Frost nails are satisfactory for a very short time, especially on asphalt when the covering of snow is thin; moreover, they are very objectionable in the stable, and a horse is always liable to injure himself with them in lying down. Calks have the same disadvantages in addition to their own."

There are in the market conical or round-pointed studs to be screwed into horseshoes at either toes, heels, or both, but *Rider and Driver* doubts their utility, "except in a long spell of snowy weather. The points wear down very fast, but the chief objection is that after a few days' wear on hard roads without the studs the thread of the holes in the shoes becomes so injured by the constant jarring that it is absolutely impossible to screw these in without retapping, which involves removal of the shoes."

If it be asked whether any non-slipping device has been invented, our contemporary answers that "in England, where, owing to the much more temperate climate, the necessity for such protection is not nearly so acute as here, there have been for at least 16 years non-slipping points easily removable, independent of screws and applicable to any shoe from that of a dray-horse to that of a child's pony. They are chisel-pointed and therefore longer lived and more efficacious than round ones, and they can be placed at any angle so as to get the edge at right angles to the line of draught. All that is necessary is to have all shoes punched before they are fitted; the points can then be slipped in whenever required and removed easily at night by means of an ordinary pair of pincers. The cost is trifling, the points being about 5 shillings [=$1.22] per hundred, and the farrier never charges extra for punching the four holes in each shoe."

RUBBER NOTES FROM EUROPE.

GREAT BRITAIN.

THE directors of the Telegraph Construction and Maintenance Co., Limited, recommended an *interim* dividend of 12 shillings per share, or 5 per cent., calling for £22,410 [=$109,058.27]. The usual annual dividend is 15 per cent.

The directors of Siemens Brothers & Co., Limited, in presenting the report for the last business year, recommend a dividend of 4 per cent. The last preceding dividend was 10 per cent., in 1901.

The annual return of British Insulated and Helsby Cables, Limited, shows the entire capital of £1,000,000 [=$4,866,500], divided equally between ordinary and cumulative preference shares, to have been taken up. There are £500,000 in 4½ per cent. debentures.

The Castle Rubber Co., Limited (Warrington, England), registered on July 10 a trust deed to secure a series of £16,000 [=$77,064] 5 per cent. debentures, of which £12,800 [=$62,291] have since been issued.

The directors of the Leyland and Birmingham Rubber Co., Limited, report that the high price of rubber and other raw materials during the business year ended on June 30 last had an unfavorable effect upon profits. The dividend, however, was the same as in the year before—6¼ per cent. During the year the company absorbed James T. Goudie & Co., of Glasgow, and the Palatine Heel Co., of Preston, by which it is believed that a considerable output of the company's manufactures is permanently assured.

FRANCE.

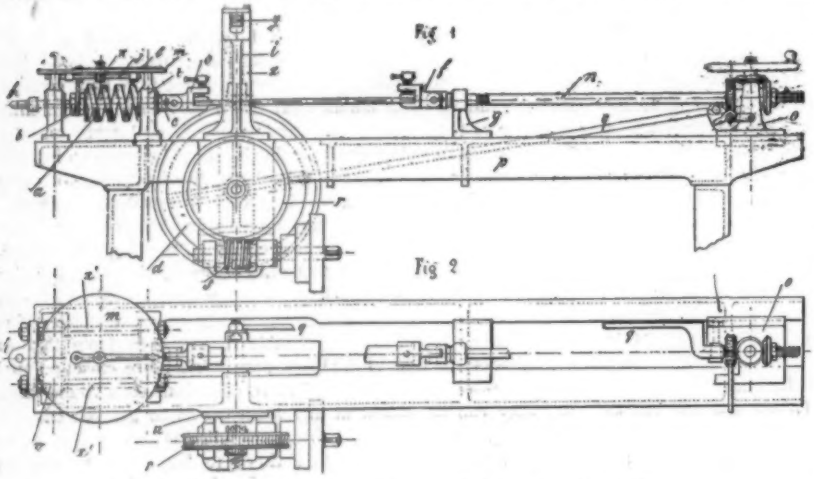
ERNEST BERLYN, Paris, dealer in rubber footwear of all kinds, including the United States Rubber Co.'s brands, has removed his business to 14, Rue Alexandre Parodi.

GERMANY.

IT is reported that the syndicate of German cable makers, whose agreement was to have terminated on June 30, has been prolonged for a period of three years.

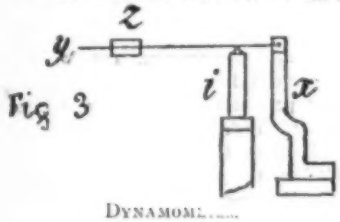
THE "P. B." DYNAMOMETER.

WITH the idea that a field exists for the better mechanical testing of india-rubber, woven threads, and some other substances and fabrics, a French inventor has developed an apparatus which he has termed a dynamometer, which has been patented in various countries and is designated in France by the trade mark "P. B." Chemical tests, while always interesting and in many cases of value, do not suffice for every purpose. In by far the majority of cases the articles in rubber, for example, supplied by factories to their customers are subjected in use chiefly to mechanical strains, and it is desirable that the manufacturers should be able to satisfy themselves that the articles are adapted to support the strains. It is for this purpose that this dynamometer has been devised.



a, steel spring; *m*, dial; *l*, pointer; *e*, jaw attached to spring; *f*, movable jaw; *n*, screw; *o*, *g*, headstocks; *q*, eccentric rod.

DYNAMOMETER FOR TESTING RUBBER.



DYNAMOMETER.

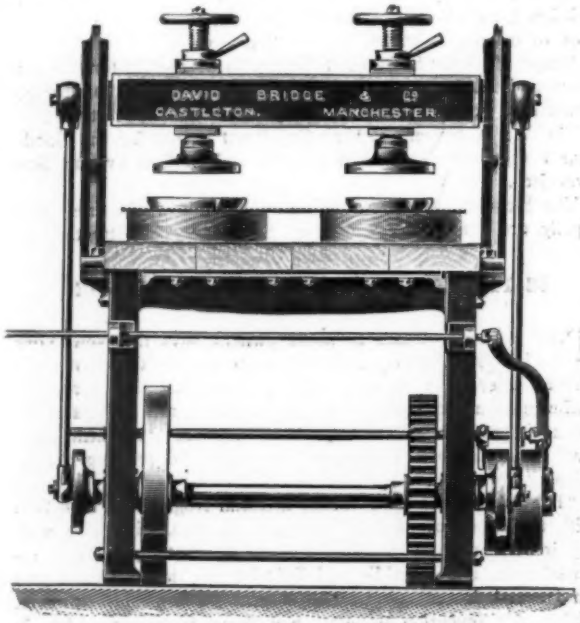
The "P. B." dynamometer, as indicated by Fig. 1 and Fig. 2 in the accompanying illustrations, is horizontal. It consists of a solid cast iron table, faced perfectly true in its upper part, resting on strong cast iron legs, stiffened by cross stays. On this table are the two principal parts of the dynamometer: the apparatus producing the stresses and the appliance for measuring them.

The table is provided with a horizontal spring balance, which carries one of the jaws to hold the test piece. Means are provided to recalibrate the spring, and the pointer is arranged so as to remain at the maximum indication on the breakage of a specimen, thus recording the breaking load. The load is applied either with a hand wheel and bevel gear for quick motion, or through worm gear for heavy loads at low speed, and pulsating stresses of any desired amplitude can be applied by means of an eccentric gear at adjustable speeds. Samples can be tested in a bath, by means of which the temperature can be varied, and the apparatus also provides for compression, plasticity, repeated bendings, wear and friction tests, so that it is capable of being applied to a large number of purposes.

One of the important features of the P. B. system relates to the possibility of determining by its aid both the wear and tear and the coefficient of friction of rubber, fabric and so on. On the table of the dynamometer a small column is placed, carrying a graduated double arm lever arrangement along which an index tongue moves, to which a marked weight may be suspended. This lever is supported on a vertical rod accurately guided in the column, and on its lower part this rod carries a pillow which presses on the piece to be abraded (see Fig. 3). The dynamometer has been brought out by A. D. Cillard fils, 49, Rue des Vinaigriers, Paris, who may be addressed also at No. 27 West Thirty-third street, New York.

SOLE AND HEEL STAMPING MACHINE.

THE machine illustrated here consists of a cast iron framework on which is mounted and fixed a wood table 3 inches thick, 42 inches wide and 39 inches long, the framework being well braced together and arranged to support standards and the mechanism under the table. The mechanism consists of a driving shaft with fast and loose pulleys running at about 100 revolutions per minute with pinion gearing into a large wheel fixed on a counter shaft. The driving pulleys are provided with belt shifting arrangements capable of being actuated either at the back or front of the machine. The counter shaft mentioned is fitted with a balanced flywheel as well as the large spur wheel, and two cranks of disc pattern, one at each end of the shaft from which connecting rods of mild steel are taken up to the slide working in vertical guides above the table. This slide or crosshead is provided with two adjustable stampers for pressing on to the dies placed upon the material being cut by hand. The dies must be moved by hand to a new position between the stamper rising and falling again. The rubber must be brought on to the table, but it is advisable to put wood blocks underneath where the dies are placed, so as to prevent cutting of the table top. The table is not removable in itself, but the blocks are changeable or removable at will. With respect to the amount of work that this machine can do, assuming that the shaft runs



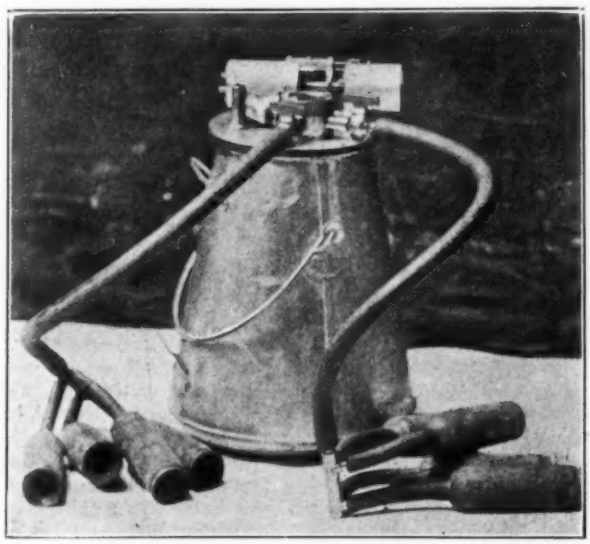
SOLE AND HEEL STAMPING MACHINE.

at 100 revolutions per minute, which is the usual speed, about 1500 pairs of soles can be cut per hour. It is assumed by the makers that two stampers would be found amply sufficient for each machine, as with two there is more adjustment allowed than with three in the way of setting the dies economically to suit the sheet. Of course, any number of stampers can be put on, but it is a question whether with more one man could move the dies sufficiently quick and advance the sheet. This machine is made by David Bridge & Co., Castleton, Manchester, England.

MILKING MACHINES.

THE number of cow milking machines already in use, and the apparent probability at present that such machines are to become important as a factor in dairying, suggests the propriety of a reference in this place to an interesting new application of india-rubber. During the past 35 years no fewer than 127 patents have been taken out in the United States alone for milking machines and parts, and several years ago a German writer mentioned 29 different milking machines as known to him. But most of these machines have fallen short of being practical in some vital point.

Recently such improvements have been made in milking machines, with such an increase in their use, as to lead the



A POWER MILKER WITH ATTACHMENTS.

United States department of agriculture to undertake an investigation, the results of which have been published in an official bulletin. No figures are given to indicate how widespread the use of these machines has become, but as these lines are written a report comes to hand that upwards of 1,500 machines of a single make have been sold in Australia alone, being sufficient to milk more than 35,000 cows daily.

The milking machines on the American market are operated by hand power, by foot power, or by gasoline engine, electric motor, or steam engine, an essential feature in every case being some form of vacuum pump, to create the suction in the teat cups which draws the milk from the cow.

The illustration herewith shows a cow milker which has recently been put upon the market. It consists, in the first place, of an ordinary milk pail made of block tin and holding about 15 quarts. On top of this pail is a tight fitting lid of aluminum, mounted on which is a pump or pulsator which works automatically and causes the intermittent action of the machine. Connections are made by means of rubber tubing to the exhaust and air pressure pipes, which are laid through the stables with convenient branches between the cows. Two rubber tubes, each about three feet long, are also connected with convenient nozzles on the lid, and on the other end of each are four cups which fit snugly over the cow's teats, two cows being milked into one pail. As the pulsator oscillates (at the rate of about 60 times a minute) the vacuum is alternately turned on and off, the teat cups causing suction and release at each alternate stroke. The machinery for operating the pulsator consists of an exhaust pump and a compressor; the exhaust produces the suction and operates the pulsator in one direction, while the compressor operates the pulsator in the opposite direction.

The teat cups are hollow and conical. Nearly an inch from the large end the cup is almost closed by a soft rubber diaphragm; this disk, being elastic, fits air tight around the different sized teats. The teats fill the conical cup, except at the small end, where suction is applied. The cup is made of three pieces of smooth hard rubber. To the end of the cup is attached a piece of glass tubing through which the milk may be seen, and this is again connected with a small rubber tube. By means of a spigot the suction may be cut off when the teat is empty. The milk is conveyed from the spigot to a head, where the milk from all four teats unites and passes into the large hose which carries it to the pail.

The Washington report referred to above covers a series of experiments, in which a comparison of machine milking and hand milking gave, generally, a result in favor of the machines, both in the saving of time and in the quantity of yield. In one experiment—with 10 cows under observation for 20 days—an opposite result was attained, and the desirability of further experimenting is pointed out. It has been established, however, that with proper care and under certain conditions, the milking machine is economical in use, and it may be regarded as a permanent fixture in dairy equipment.

WANTS AND INQUIRIES.

[423] WANTED to communicate with a competent rubber technologist; one who is up to date on mineral rubber and rubber compounds, and one who is known to the rubber trade.

[424] Who are makers of "Sphincter Grip" armoring machines for india-rubber hose?

[425] Where can "viscose" be obtained, or where can the method of its manufacture from cotton be obtained?

[426] An American company, planting *Castilloa* in Mexico write: "Can you refer me to any manufacturer or dealer in rubber tapping tools, latex cups, and coagulating tanks?"

[427] A European firm desires the name and address of the firm controlling articles made from "vulcan fibre" or "silesith."

[428] An inquiry comes from Japan for a machine for making rubber balls, which are now made in that country only by hand.

AMERICAN RUBBER GOODS EXPORTS.

THE following is an official statement of values of exports of manufactures of india-rubber and gutta-percha from the United States for eight fiscal years, ending June 30:

YEARS.	Belting Packing and Hose.	Boots and Shoes.	All Other Rubber.	TOTAL.
1906-07	$1,253,369	$1,231,898	$3,729,643	$6,214,910
1905-06	1,221,159	1,505,082	2,966,144	5,692,385
1904-05	994,100	1,214,342	2,572,375	4,780,817
1903-04	879,476	1,086,364	2,469,750	4,435,590
1902-03	819,985	1,056,491	2,299,875	4,176,351
1901-02	634,146	1,046,315	1,781,941	3,462,402
1900-01	565,726	724,015	1,727,527	3,017,268
1899-00	541,830	420,746	1,405,212	2,367,788

THE OBITUARY RECORD.

MRS. ADELAIDE E. PEARSON, wife of Henry C. Pearson, Editor of THE INDIA RUBBER WORLD, died on the morning of August 16, at No. 14 Olmstead street, Jamaica Plain, Boston, which had been their home for twenty years. Mrs. Pearson was a native of North Norway, Maine, and the daughter of M. Osgood French and Betsey Pierce French. She was engaged in literary work in Boston before her marriage, and later was identified actively with various forms of religious institutional work in that city. Funeral services were held at North Norway on August 18.

THE LATE HENRY F. DOHERTY.

A VERY wide circle in the trade will learn with regret of the death of Mr. HENRY F. DOHERTY, a director in and sales manager of the Davol Rubber Co., which occurred on July 31 at his home in Providence, Rhode Island. Mr. Doherty was fortunate in having won both success in life and very many devoted friends. These gathered in large numbers to pay their last tribute, on August 2, at services held at the late home of the deceased, the Rev. S. H. Webb officiating, after which the interment took place at Pocasset cemetery, Providence.

Mr. Doherty was a native of Providence, and in his fifty-seventh year. He has been described as the best known, the most popular, and the most successful seller of goods the druggists' sundries trade has ever known. The following notes "In Memoriam" have been supplied by a friend of long standing, Mr. Theodore E. Studley, of the New York rubber trade:

HENRY F. DOHERTY.

"When Mr. Joseph Davol took Mr. Doherty from a printing office and sent him out to sell rubber goods, it was a case of natural selection, as Mr. Doherty had no knowledge of either the goods or the trade.

"At that time, I was the buyer of large quantities of rubber sundries, and a mutual friend gave Mr. Doherty a card of introduction to me. His genial manner and transparent ignorance of the work he had undertaken appealed to me, and I coached him then and afterwards to his and my own great satisfaction. His success in the business showed his eminent fitness for the position, as well as the splendid support given him by the company he represented. For about twenty-five years, he has visited the trade, making new friends and keeping his old ones, holding their business against all competitors, by his absolute straightforwardness and honest business methods. His last trip to New York was in the first week of May, at which time he was ill, but kept up and attended to some business after his return to Providence. But the last of May, he was prostrated, and from the 30th of that month till his death was unconscious most of the time.

"He was an all around good fellow and will be most missed by those who best knew him, which is the highest compliment possible for any of us."

OBITUARY NOTES.

JOSEPH WILLETT CLAPP, who died on August 17 at Ashland, Massachusetts, in his seventieth year, was the father of Walter A. Clapp, who has been connected with the rubber goods selling trade in New England and in New York state for a number of years. Mr. Clapp was connected with the Portland and Kennebec railroad as early as 1853, and later with the Maine Central road, after which he was in business in Bangor, Maine, and in Boston. The interment was at Bangor, on August 20, with Masonic ceremonies.

Abiel Copelin died at his home in Malden, Massachusetts, on July 8, in his seventy-third year. He had been employed for 42 years by the Boston Rubber Shoe Co., during the greater part of the time as an overseer, and was recently retired by them on a pension.

IN THE AMAZON RUBBER COUNTRY.

AN ENGLISH COMPANY "MAKES GOOD."

DE MELLO Brazilian Rubber Co., Limited, an English company formed in 1906 with £495,000 [=$2,408,917.50] capital, to acquire the rubber estates of Sebastiao F. de Mello in the Acre country, apparently have made a good beginning. According to the company's prospectus, the production of these estates had shown for five years an average output of nearly 300 tons of rubber per annum, rising in 1905 to 383 tons. Reports from Manáos indicate the receipt at that port by this company, during the twelve months ending June 30 last, of 565¼ tons as follows: Rubber, 1,064,279 pounds; Caucho, 180,387 pounds; total, 1,244,666. This was produced on the Acre river, with the exception of 4030 pounds of rubber from the Javary. The exports from Manáos, on account of the company, amounted to about 560 tons, through Dusendschön, Nommensen & Co. The firm of Mello & Co. continue in business at Manáos and received during the last crop season 2,208,943 pounds of rubber and caucho, mainly from the river Juruá, they ranking third in importance among the rubber receivers at Manáos. This business, by the way, is distinct from that of the De Mello Brazilian Rubber Co.

RUBBER OUTPUT LIMITED BY LABOR.

THE rubber situation was discussed by the chairman of the Amazon Steam Navigation Co., Limited, at the last annual meeting of the shareholders in London. Speaking of the Pará rubber output for the past year, which was the largest on record, he said: "The present range of values is one to give every stimulus to production, and production is practically a question of labor. The extent of the yield is dependent on the number of men employed upon it, and the supply from Ceará (from which state nearly all the men employed in rubber collecting come) seems to be fairly abundant. With regard to the production of rubber in the East, of which accounts frequently appear in the press, it must be many years before this can compete seriously with the Amazon."

COLOMBIA ENCOURAGES RUBBER PLANTING.

UNDER a decree published at Bogota on July 20, 1907, the government of Colombia offers a bonus of $4 (gold) per quintal [=110.23 pounds] on all plantation or cultivated rubber exported within seven years from the date of the decree.

SALE OF AMAZON RUBBER CAMPS.

ONE may see frequently in the Pará newspapers the advertisements of a *seringal* (rubber camp) for sale, generally at auction, due to a liquidation in business. The lands as a rule are not privately owned, but one who opens a *seringal*, cutting out *estradas* (paths), and putting up a *barracao* for the workers, is recognized as having proprietary rights in such improvements, and these are transferable. A rubber property recently advertised at auction in Pará was located in Chaves, on the island of Marajó, and THE INDIA RUBBER WORLD took the pains to inquire as to the result of the sale. The price realized was 50 milreis per *estrada*

(100 rubber trees on an average), or about $15.71, with exchange at 15½ pence. This was very low, since such property is usually considered worth 500 milreis per *estrada*. But as our correspondent writes: "It is very difficult to judge of the value of a piece of property by the price it brings at an auction. At times, owing to scarcity of money, properties go very cheap."

INAMBARI MAKES A BEGINNING.

AT a special meeting of shareholders of the Inambari Pará-Rubber Estates, Limited (London, July 22), the chairman, Sir William Martin Conway, explained the causes which had delayed completion of the purchase of the properties in Peru which the company was formed to acquire. But preparations for collecting rubber had not been delayed, the vendors having agreed to guarantee the return of any money which might be expended by the company in the event of the purchase of the properties falling through. The company is provided with £75,000 [=$364,987.50] in working capital; some rubber gatherers have been secured and other preparations made. The next regular tapping season is to begin in October. Thomas H. Slater has been secured as manager of the company's properties.

A PARA BOOK ON RUBBER PLANTING.

THE treatise on rubber planting, adapted for use in the Amazon region, referred to by the governor of Pará in his last message as being in course of preparation [see THE INDIA RUBBER WORLD, January 1, 1907—page 104] has made its appearance. The author is Dr. Jacques Huber, director of the Pará Museum. It discusses the practicability of cultivating the *Hevea Braziliensis*, the principal native rubber tree of Brazil, based upon the results attained in the Far East, and points out the methods employed in Ceylon and elsewhere. Mixed planting—that is, rubber with cacao or other crops—is recommended. The title of the brochure of 59 pages, printed in Portuguese, is: "A Seringueira (*Hevea Braziliensis*). Conselhos praticos para a sua cultura racional."

AN ALARM SOUNDED IN PARA.

A NOTE in a recent issue of this Journal on a test for farinha in rubber serves as the text for a lengthy contribution to the Pará newspaper, *Folha do Norte*, on the adulteration of rubber in its original preparation, signed by Americo Rodrigues. Doubtless INDIA RUBBER WORLD readers elsewhere will be interested in learning how rubber topics are discussed in the great home of rubber—the lower Amazonian capital. It probably will be news to them that the use of farinha in rubber has led to such vigorous protests as are here reported. Senhor Rodrigues writes:

ADULTERATED RUBBER.

IT is reported by North American newspapers, and particularly by reviews that are specialists in matters pertaining to the commerce and industry of india-rubber, that the manufacturers of rubber articles in the different industrial centers of the great republic are directing all their efforts to the refusal of the raw article when it presents signs of adulteration by the addition of mandioc flour. These manufacturers hope to be able to get buyers in Belem (Pará) and Manáos to refuse to accept the rubber which is adulterated in such manner; or if they do buy it, they should do so at a price relatively lower, so that the difference can compensate for the expenses incurred in removing the extraneous substance.

This question has been the subject of heated discussion in the meetings of manufacturers which have been held lately, several experiments made proving the inferiority of the adulterated article in its use in certain manufactures.

Several processes have been suggested for detecting the adulteration, that discovered by Mr. Walter E. Piper, of the Boston Rubber Shoe Co., being the one which is commonly used. This process consists in the employment of a solution in water of iodine water and potassium iodide, which on being applied with a brush on the cutting of the rubber, reveals the presence of the farinaceous admixture by the bluish color which the rubber assumes upon contact with the solution.

Now facts of this kind, which directly affect the commercial welfare of the vast region which we inhabit whose very life is so closely interwoven with the rubber extracting industry, will not pass unnoticed by those who are properly solicitous about the land that gave them birth.

With this idea in mind, we shall attempt to bring to light these facts, calling the attention of the interested parties to these irregularities, fraught with so many perils to our principal industry, and at the same time demand from the competent authorities the enactment of repressive measures against such a wanton abuse.

While conserving always the rudimental processes of extraction, here where the *Hevea* grows spontaneously, we are behind those progressive regions where the rational culture of the precious plant is yielding already a liberal harvest. And we blindly open the door—either through the adulteration of rubber or through the criminal production of inferior qualities—for the competition which vigilantly lies in wait to take advantage of every opportunity.

Statistics still give to the Amazon region the supremacy in the world's supply of rubber; but, on the other hand, they report a depreciation in the value of the article, due to the facts already related.

The extraordinary progress of industry in this country, always ascending, in proportion as science and civilization become intensified, has made an article like rubber which, at least until now, has had no substitutes, the object of the covetous dreams of capitalists. Hence the constant organization of companies and enterprises requiring the subscription of millions for the exploitation of the rich industry and the establishment of rational culture of the famous *Euphorbiaceæ* in all tropical countries where they can be easily acclimated.

In Ceylon and the Malay peninsula alone there are approximately 30,000,000 *Hevea* trees planted, and, according to a very useful publication by the distinguished Dr. Huber, director of the Pará Museum, it is not impossible that in ten years this number will be duplicated. It is very probable, says this scientist, that by 1915 such plantations will be able to produce as much as, and possibly more than, the quantity now produced in the Amazon districts.

In the face of such grave danger only a people like ours could maintain an indifference so criminal. It may be that our indifference to destiny is an effect of our environment, whose grandeur we continually extol, without deriving from it the advantages which nature has intended. But it is urgent that we awake from the ecstatic apathy into which we have fallen and endeavor to ameliorate the rubber situation, including the extension of its production by means of rational cultivation.

AMERICO RODRIGUES.

HE YEARNED FOR GALOCHES.

IN the advertising columns of a recent number of the Paris *Figaro*, under the classification of "Renseignements Utiles," or "Useful Notices," an advertisements appears, of which the following is a literal translation:

"A Russian dwelling in Paris since a recent date feels desolated at not being able to find galoches of india-rubber of the Russian model, that is to say rigid. He would be grateful to any one who would indicate to him a stock of these Russian galoches in Paris. Write to the *Figaro*, SERGE V."

The advertisement occupies six lines of space and advertising space is not cheap in Paris newspapers. It probably cost Serge V., says the New York *Sun*, from $6 to $10 to seek relief for his desolation at the lack of Russian galoches.

News of the American Rubber Trade.

POPE MANUFACTURING COMPANY ASSIGNS.

THE Pope Manufacturing Co. (Hartford, Connecticut) on August 14 announced: "We made a voluntary assignment to-day, owing to inability to get the company's loans renewed because of the present high rate of money. The assignment was made for the benefit of the creditors, as the assets of the company are far in excess of the liabilities. The business will continue the same as heretofore, and the assignment will have no effect on the company's agencies or the customers who purchase Pope cars." Nominally the assignment was forced by a bill of complaint filed by the MacManus-Kelly Co. (Toledo, Ohio), but the preceding was in the nature of a friendly suit.

The first papers in the case were filed in the chancery court of New Jersey, the company being a New Jersey corporation, in which state Egbert J. Tomblyn, of Newark, N. J., and Albert L. Pope, of Hartford, were appointed receivers. Mr. Pope, who is vice president of the company and a son of Colonel Albert A. Pope, its president, was subsequently appointed receiver by the United States circuit courts in New York, Connecticut, Massachusetts and Maryland, in which states the company operates and possesses property. The receivership proceedings relate also to the Pope Motor Car Co., a subsidiary company.

The Pope Manufacturing Co. was incorporated February 27, 1903, to acquire the properties of the American Bicycle Co. and what remained of its business. The chief spirit in the organization was Colonel A. A. Pope, who undertook to revive the bicycle trade, at the same time taking on the manufacture of automobiles on a large scale. The company is capitalized at $22,500,000. It is stated that the business of the company has been very large and that it has had a borrowing capacity until now of $1,900,000, which was reduced lately by the stringency of the money market to $1,000,000, thus rendering the company unable to renew certain loans. Colonel Pope, the founder and head of the company, has been instrumental in developing a very large outlet for rubber, first as a bicycle manufacturer and later in respect of automobiles. At one time he was the owner of the Hartford Rubber Works, which first became a tire factory under his control.

GEORGE WATKINSON.

REPUBLIC RUBBER CO.—NEW BUILDING.

DURING the last week in August ground was broken for the foundations of an additional building for the Republic Rubber Co. (Youngstown, Ohio)—five stories, concrete construction, 160×40 feet. The two lower floors will be used in extending the present automobile tire department, the demand for their tires being in excess of the existing manufacturing capacity. The space above will be devoted to the manufacture of cotton rubber lined fire hose, a line which the company are now adding. The company will weave their own jackets and market a specially high grade of hose of their own patented construction. The company have constructed another large building within 18 months, and their business is reported to have shown a large increase in all departments.

FAULTLESS MANUFACTURING CO.'S ANNUAL.

THE annual meeting of shareholders of The Faultless Rubber Co. (Ashland, Ohio) was held in the company's offices on August 2. The treasurer's report was gratifying, the company having had a very prosperous year. A number of improvements are now under way, including two new buildings, one to be used for a boiler house and the other for manufacturing purposes. The following were elected directors for the year ending June 30, 1908: H. B. Camp, A. Vogt, T. W. Miller, G. D. Bates and F. E. Meyers. The board then elected the following officers:

T. W. Miller, president. He has been general manager since the organization of the company and succeeds Mr. H. B. Camp, president from the beginning, who retires from office on account of ill health.

A. Vogt, vice president, reëlected. He is a manufacturer and vice president of the German-American Insurance Co. of Rochester, New York.

I. Leroy Miller, secretary. He has been identified with the company from the first and succeeds C. E. Campbell, who becomes general manager.

George D. Bates, treasurer, reëlected. A banker of Akron, Ohio.

Mr. F. E. Meyers, the newly elected director, is a prominent manufacturer of Ashland and is most favorably known in business circles throughout northern Ohio.

MR. WATKINSON GOES WITH ALDEN & CO.

Mr. GEORGE WATKINSON, whose portrait appears on this page, has become connected with the house of George A. Alden & Co. (Boston), the oldest crude rubber merchants in the country. Mr. Watkinson himself is by no means new to the rubber trade, though hitherto his relation to it has been in the manufacture and distribution of goods. He is, in fact, so widely known among rubber men that his portrait would be recognized by very many of our readers without the aid of any label.

THE GREAT WESTERN RUBBER CO.

THE assets of the Kansas Rubber Co. (Olathe, Kansas) have been transferred to The Great Western Rubber Co., a new corporation, with larger capital, who are increasing the capacity of the factory and installing additional machinery. An equipment for making automobile inner tubes will be put in, and the production will include mechanical goods. The Kansas Rubber Co. was incorporated in the latter part of 1905. Olathe, the location of the factory, is about 20 miles from Kansas City, Missouri.

W. D. ALLEN MANUFACTURING CO.'S FIRE.

THE fire in the warehouse of the W. D. Allen Manufacturing Co. (Chicago), on August 15, did not seriously interfere with the business of the firm, being confined entirely to the annex at No. 153 Lake street, where the upper floors were burned out. The main building, at No. 151 Lake street, was saved by a fire wall and underwriters' doors which protected the openings. The distribution of stock was such that no one line of goods was entirely consumed, and the firm were doing business as usual the morning after the fire. The brass manufacturing department, also the packing department and considerable merchandise, had just been removed to the fine new building of the firm on Western avenue, so that the loss was less on this account than it otherwise would have been. The firm carried full insurance.

OMAHA RUBBER CO.—CHANGE OF NAME.

THE Omaha Rubber Shoe Co. (Omaha, Nebraska), who were mentioned lately in these pages as having put in stock "everything

in rubber," have thought it advisable to drop the name "Shoe," and in future will conduct their business under the name Omaha Rubber Co. New articles of incorporation were filed on July 12, recording the change, signed by Edward H. Sprague, president of the company; Carroll S. Montgomery, and Matthew A. Hall. The authorized capital is $150,000.

NEW CONSTRUCTION AT STAMFORD.

THE Stamford Rubber Supply Co. (Stamford, Connecticut) have purchased land on which to erect a new and larger factory, for which plans have been drawn. The building will be 75 x 90 feet, two stories, with gravel roof. The company for some time past have been in the position of not being able to manufacture supplies on a sufficiently large scale to keep pace with their orders.

THE FISK RUBBER CO. IN NEW YORK.

THE new building erected for the use of The Fisk Rubber Co. (Chicopee Falls, Massachusetts) for their branch in New York,

THE FISK RUBBER CO.'S NEW YORK BRANCH.

at No. 1725 Broadway, is illustrated on this page. It is a two story building, the exterior trimmed in bronze and the interior with dark stained woodwork, including hardwood floors, and the walls decorated with Japanese leather. The repair shop, located in the rear of the first floor, is one of the most complete in the country. The offices are on the second floor.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for five weeks, ending August 26:

COMMON STOCK.

Week	July 29	Sales 1900 shares	High 36⅞	Low 35½
Week	Aug. 5	Sales 1940 shares	High 36	Low 34
Week	Aug. 12	Sales 3550 shares	High 35½	Low 30
Week	Aug. 19	Sales 4105 shares	High 29¾	Low 27½
Week	Aug. 26	Sales 785 shares	High 30⅝	Low 29

For the year—High, 52½, Feb. 16; Low, 27½, Aug. 13.

FIRST PREFERRED STOCK.

Week	July 29	Sales 1728 shares	High 99¼	Low 97¾
Week	Aug. 5	Sales 1562 shares	High 98	Low 97
Week	Aug. 12	Sales 2030 shares	High 98	Low 96
Week	Aug. 19	Sales 2960 shares	High 95	Low 85½
Week	Aug. 26	Sales 4940 shares	High 88½	Low 85

For the year—High, 109⅞, Jan. 7; Low, 85, Aug. 20.

SECOND PREFERRED STOCK.

Week	July 29	Sales —— shares	High —	Low —
Week	Aug. 5	Sales 100 shares	High 66	Low 66
Week	Aug. 12	Sales 150 shares	High 65	Low 65
Week	Aug. 19	Sales 2580 shares	High 63¼	Low 60
Week	Aug. 26	Sales 100 shares	High 61½	Low 61½

For the year—High, 78½, Jan. 7; Low, 60, Aug. 15.

SYSTEM IN DEALING WITH SUPPLIES.

"THE Work of the Supply Department," a paper read before the Telephone Society of New York by Mr. D. C. Cox, of the New York Telephone Co., is a study of the evolution and functions of the supply department of that important corporation. They rightly regard the supply department (which includes purchasing) as among the most important in their organization, but it is not more important in the telephone business than in every factory. Mr. Cox's paper is mentioned here, therefore, with a view to calling it to the attention of the management of every rubber factory where system is appreciated, and commending the study of it as well worth while.

But Mr. Cox's paper is of interest from another point of view. No purchasing agent has so clearly brought out before the idea that, in buying supplies, the item of first importance is quality; second, promptness of delivery, and third, price. He regards it as a mistaken policy to put price foremost in considering whether or not to make a given purchase.

TRADE NEWS NOTES.

THE Peerless Rubber Manufacturing Co. (New York) have added another agency to their list in the southern trade—No. 113 Main street, Houston, Texas.

Rockland Elastic Fabric Co. (Rockland, Massachusetts), organized early this year with $10,000 capital, have taken larger premises, to accommodate their growing business. Chester Woodward is president, George A. Woodward treasurer, and C. D. Stringer secretary.

The Warren Rubber Co. (Warren, Ohio), wholesalers of rubber footwear, have increased their capital to $80,000. The company were incorporated early in 1897 with $20,000 capital, which was increased two years ago to $50,000.

Morgan & Wright (Detroit, Michigan), among the other accessories for the automobile, manufacture a full line of battery jars.

The New England agency for the line of rubber heels made by the Goodyear Rubber Co., at Middletown, Connecticut, has been taken by Locke Brothers Co., No. 431 Albany building, Boston, dealers in supplies for the shoe trade.

J. Loewenthal & Sons, waste rubber merchants, of Chicago, announce to dealers in the East and the middle West that they have established a branch office and warehouse in New York, at No. 59 West street.

The B. & R. Rubber Co.'s plant (North Brookfield, Massachusetts) has been equipped with hydrants, connecting with the large water pipes recently extended to their yard.

The proceedings in the matter of the Electric Rubber Manufacturing Co., mentioned in the last issue of this paper (page 354) as having been announced for July 29 in the court at Jersey City, were adjourned to September 9. They relate to the claims against the bankrupt estate by the Manhattan Storage Co. (New York).

Joseph E. Knox & Co. (Lynn, Massachusetts), suppliers of cutting dies for the rubber industry, have removed to a larger factory, at No. 22 Sea street.

The Raino Co. (No. 735 South Halstead street, Chicago) has been formed for the manufacture of the "Raino" waterproof garments—a line in which a considerable trade has been developed by another firm. Rubber is not used in the waterproofing.

A report published in certain Western newspapers that the Goshen Rubber Works (Goshen, Indiana) had ceased to do business proves to be without foundation.

What is claimed to be the lowest score ever made by any golfer, in open competition, was made by Gilbert Nichols in the Van Cortlandt tournament, at New York, using a "silk pneumatic" ball made by the Goodyear Tire and Rubber Co. The score was 72 holes in 286.

The Boston Belting Co., manufacturers of mechanical rubber goods of all kinds, are sending to their friends in the trade one of "King's Booklets," containing good views of the new railroad tunnels and terminals which are being constructed under nearly every part of New York city.

NEW INCORPORATIONS.

THE Safety Rubber Heel Co., June 20, 1907, under the California laws; capital, $25,000. Incorporators: F. Blair Turpin, Mill Valley, Cal.; Francis M. Wright and Crystal L. Howe, San Francisco. Place of business: San Francisco.

The W. D. Newerf Rubber Co. has been incorporated under the laws of California, with $100,000 capital, full paid, to succeed to the business of W. D. Newerf, Pacific Coast representative for the tires of the Goodyear Tire and Rubber Co. The new company has opened a store in San Francisco and one in Fresno, Cal., and agents appointed in San Diego, Riverside, Portland, Seattle, and Honolulu. Al. Leonard is the head of the San Francisco house, and George Ehman the Fresno manager.

Caldwell Belting and Rubber Co., of Minneapolis, August 12, 1907, under the Minnesota laws; capital, $25,000; to deal in the class of goods described. John Caldwell (Cincinnati), president; A. H. Brockman, vice-president; D. F. Taylor, secretary; F. E. Satterlee, treasurer.

TRADE NEWS NOTES.

WORK was resumed at the factories of the Boston Rubber Shoe Co. on Monday, August 12, after a summer shutdown of two weeks.

A dealer in waste material at St. John's, Newfoundland, is reported by a local newspaper to have made a recent shipment to New York of 18 tons of old rubber shoes, on which his net profit was about $1,800.

The annual picnic of employés of The B. F. Goodrich Co., on August 3, at Silver Lake, near Akron, was attended by more than 10,000 persons. There was an attractive program of sports, and the occasion was voted the most enjoyable in the history of Goodrich picnics.

The directors of the Boston Woven Hose and Rubber Co. have declared the semi-annual dividend of $4 per share on the common stock, payable September 16, 1907, to stockholders of record September 5.

The Electric Cable Co. (New York) have purchased the business of the Eastern Electric Cable and Wire Co., makers of rubber covered wires, at Roxbury, Massachusetts, and will combine the equipment with their factory at Bridgeport, Connecticut.

The Knox Automobile Co. (Springfield, Massachusetts) have made a voluntary assignment, for the benefit of creditors. A reorganization is hoped for, and the plant has not been closed. The assignment is to Alfred N. Mayo (treasurer of The Fisk Rubber Co.), as trustee.

In spite of the fact that the flat tread has captured many tire makers, the G & J Tire Co. are making an oval raised tread, and hold that it is not only scientific in design, but that it has more real value to the motorists than the other type.

The "Glidden trophy" was won this year by the Buffalo Automobile Club, all of whose cars were fitted with Goodrich tires. Goodrich tires likewise won the two previous Glidden tours.

In the recent Glidden tour, from Cleveland to New York, 1519 miles, run in twelve days, 33 of the cars, equipped with Diamond tires, used a total of only 146 tires, including original equipment. That is, only 14 extra tires were called for.

The "Blizzard" tire case, made by The Vehicle Apron and Hood Co. (Columbus, Ohio), is adjustable in length and in width, so as to accommodate tires of different sizes.

Smith & Mabley (New York) send a letter to the trade saying that they have decided to equip their Simplex cars for 1907 with Continental tires.

The Firestone Tire and Rubber Co. are putting a new tire on the market which is designed effectually to prevent skidding. It is a large tire and intended for use on heavy machines. The "Dual Tread" has two ridges of rubber projecting from its surface, the outer edges of which are placed about three inches apart and they rise a half-inch above the boot of the tire.

FIRESTONE ANNUAL MEETING.

THE annual meeting of shareholders of the Firestone Tire and Rubber Co. (Akron, Ohio) was held in the company's offices on August 21. The annual statement showed larger sales than in any former year. The board was reëlected, consisting of H. S. Firestone, Will Christy, R. J. Firestone, A. C. Miller, and L. E. Sisler. The officers were also reëlected: H. S. Firestone, president and general manager; Will Christy, vice-president; S. G. Carkhuff, secretary; L. E. Sisler, treasurer. A new office, assistant treasurer, was created, and filled by the election of F. R. Talbott. The shareholders made a tour of the plant, noting particularly the important new buildings.

REINFORCED HARD RUBBER CO.

ALL the property of the bankrupt Reinforced Hard Rubber Co., at Nos. 62-68 Howell street, Jersey City, New Jersey, was sold at public auction by the trustee, on August 22, in bulk, to E. G. Baetjer, William J. Strauss, and J. Leibstein & Son, all of Baltimore, for $12,650, subject to confirmation by the court. The company was incorporated under the Delaware laws March 13, 1905, to manufacture hard rubber goods, under patents granted to Dr. W. R. Sine, of Williamsport, Pennsylvania. The factory was not long operated, and early in this year the company was placed in the hands of receivers. At various times there have been reports that a reorganization was contemplated, with capital to be supplied by some of the Baltimore parties named above, and the removal of the business to the latter city.

RUBBER PLANTING COMPANY MEETING.

THE annual meeting of shareholders of La Nueva Providencia Rubber Co. was held on August 21 at Providence, Rhode Island. The meeting was held at the Warwick Club, where luncheon was served, followed by an elaborate shore dinner. The officers were reëlected: Edward M. Holmes, president; Leo F. Nadeau, secretary and treasurer; Clyde E. Gardner, general manager on the estate in Guatemala.

TRADE NEWS NOTES.

THE financial affairs of the Pope Manufacturing Co., the assignment of which is reported in another column, are to be investigated by a committee of five, appointed at a meeting of creditors held in Chicago on August 22. The committee will report at another meeting to be held in New York. The creditors represented have claims aggregating $2,000,000.

Richard C. Smith has been appointed sales agent of The Safety Insulated Wire and Cable Co. (New York), in place of Avery P. Eckert, resigned, and appointed R. C. Wilson his assistant. Mr. Eckert has been appointed general sales manager of the Duplex Metals Co. (New York), makers of Monnot metals.

Mr. C. H. Arnold, of the firm of Poel & Arnold, after a vacation at his country place in Stoneham, Massachusetts, covering some two months, in which he successfully garnered some 60 loads of hay, is back at the New York office, while Mr. E. E. Wadbrook, who has charge of the Boston end of the same house, has gone to Europe for a vacation.

Among the delegates to the international congress of zoology held recently at Boston was Dr. Emil A. Gœldi, who resigned in April the post of director of the Pará museum, which he was instrumental in founding. Dr. Gœldi still holds an honorary relation to the museum, and was its representative at the Boston congress. The delegates visited New York in a body.

Sir David Morris, K.C.M.G., of Barbados, commissioner of agriculture for the British West Indies, was in New York during part of the past month.

Robert E. Tyson, of Bridgeport, Connecticut, is about opening a factory for rubber substitutes at Fairfield, Conn., to be equipped with the latest machinery and have a capacity of two or three tons per day.

G. H. Proctor Supply Co., Nos. 31-33 Stanhope street, Boston, have taken the New England agency for the tires made by the Republic Rubber Co. (Youngstown, Ohio).

STATISTICS OF RUBBER PRODUCTION.

THE figures below, derived from official sources, show an increased rate of output from the three countries referred to, which is a different showing from that of the regions reported on last month [page 340]:

MADAGASCAR.

	Pounds.
1903	1,284,204
1904	1,902,410
1905	1,989,255
1906	2,782,481

SOUTHERN NIGERIA PROTECTORATE (BRITISH WEST AFRICA).

	Pounds.		Pounds.
a 1896-97	386,131	1901	1,740,156
a 1897-98	592,309	1902	865,834
a 1898-99	874,298	1903	1,177,803
a 1899-1900	1,450,567	1904	2,408,926
b 1900	2,251,315	1905	2,842,831

a—Fiscal years ending March 31.
b—The figures for the last three months of the fiscal year 1899-1900 are included also in the return for the complete calendar year 1900.

ECUADOR.

	Pounds.		Pounds.
1898	1,588,681	1902	868,580
1899	1,041,823	1903	1,088,651
1900	1,103,511	1904	1,143,045
1901	709,223	1905	1,290,445

THE firm of Dewette & Co., of Yokohama, are engaged in the business of importing crude rubber for the rubber goods and insulated wire factories of Japan, and are in close touch with all the principal buyers of this material. They wish to form connections with suppliers of such material in the United States, and may be addressed through Postoffice box 114, Yokohama, Japan.

THE writer of some excellent stories of home life in and about Tula, appearing in *Modern Mexico*, is the wife of Mr. J. Herbert Foster, manager of the plantation of the Merideo Rubber Planting Corporation, in the state of Vera Cruz.

Review of the Crude Rubber Market.

THE market for rubber of all sorts has been quiet during the past month, which closed with quotations lower than at our preceding report. That is, prices were lower for Pará grades—in fact, down to the level reported on July 1—but no change was quotable on several grades of Africans and Centrals. It is a notable fact that some African sorts are now quoted at the same figure as Islands fine Pará. The explanation doubtless will be found in the fact that whereas the last Pará crop was the largest ever recorded, certain African rubbers—Lopori, for example—are coming to the market in reduced quantities.

The new Pará crop does not compare favorably, thus far, with previous years, as these figures (embracing Pará rubber and Caucho, in tons) will indicate:

	1904.	1905.	1906.	1907.
July	1250	1450	1840	1320
August	1260	1300	1690	*a*1360
Total	2510	2750	3530	2680

[*a*—To August 28, 1907.]

At the last Antwerp sales (August 9) about 605 tons were offered, of which 492 tons found buyers, at an average below estimations of about 14 centimes, or 1½ per cent. The decline was not general, however, and the feeling prevails at Antwerp that a higher level will prevail soon. The same sentiment is shared in the New York market, based upon the idea that more liberal buying is due in the near future, when a firmer condition of the market may be looked for.

The next Antwerp sale is announced for September 19. Arrivals at Antwerp during the first seven months of 1907 amounted to 3192 tons, against 3356 tons in the same months last year and 3210 tons up to July 30, 1905. The arrivals from the Congo Free State, however, were larger than in the same period of either 1906 or 1905.

Following is a statement of the prices of Pará grades, one year ago, one month ago, and August 29—this date:

PARA.	Sept. 1, '06.	Aug. 1, '07.	Aug. 29.
Islands, fine, new	119 @120	107@108	105@106
Islands, fine, old	none here	none here	none here
Upriver, fine, new	124 @125	115@116	110@111
Upriver, fine, old	126 @127	117@118	113@114
Islands, coarse, new	66½@ 67	62@ 63	59@ 60
Islands, coarse, old	none here	none here	none here
Upriver, coarse, new	91½@ 92	90@ 91	89@ 90
Upriver, coarse, old	none here	none here	none here
Caucho (Peruvian), sheet	75 @ 76	71@ 72	70@ 71
Caucho (Peruvian), ball	90 @ 91	90@ 91	88@ 89
Ceylon, fine, sheet	142 @143	133@134	133@134

AFRICAN.

Sierra Leone, 1st quality	99@100	Lopori ball, prime	105@106
Massai, red	90@100	Lapori strip, prime	99@100
Benguella	70@ 71	Madagascar, pinky	83@ 84
Accra flake	@ 18	Ikelemba	none here
Cameroon ball	74@ 75	Soudan niggers	85@ 86

CENTRALS.

Esmeralda, sausage	82@ 83	Mexican, scrap	81@ 82
Guayaquil, strip	71@ 72	Mexican slab	64@ 65
Nicaragua, scrap	80@ 81	Mangabeira, sheet	50@ 60
Panama, slab	63@ 64	Guayule	45@ 48

EAST INDIAN.

Assam	95@ 96	Borneo	36@ 37

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	5$100	Upriver, fine	6$050
Islands, coarse	2$700	Upriver, coarse	4$700
		Exchange	15¼*d.*

Latest Manàos advices:

Upriver, fine	6$000	Upriver, coarse	3$900
		Exchange	15 9/32*d.*

NEW YORK PRICES FOR MAY (NEW RUBBER).

	1907.	1906.	1905.
Upriver fine	1.12@1.16	1.24@1.26	1.31@1.35
Upriver coarse	.88@ .92	.90@ .93	.95@ .97
Islands fine	1.10@1.15	1.21@1.23	1.29@1.32
Islands coarse	.62@ .67	.65@ .71	.73@ .76
Cametá	.70@ .72	.70@ .73	.78@ .81

NEW YORK PRICES FOR JUNE (NEW RUBBER).

	1907.	1906.	1905.
Upriver, fine	1.08@1.12	1.23@1.25	1.30@1.35
Upriver, coarse	.86@ .88	.90@ .92	.94@ .97
Islands, fine	1.04@1.10	1.19@1.22	1.28@1.33
Islands, coarse	.61@ .63	.65@ .66	.72@ .76
Cametá	.70@ .71	.70@ .72	.74@ .80

NEW YORK PRICES FOR JULY (NEW RUBBER).

	1907.	1906.	1905.
Upriver, fine	1.08@1.15	1.22@1.24	1.28@1.31
Upriver, coarse	.86@ .90	.89@ .91	.90@ .95
Islands, fine	1.04@1.08	1.18@1.20	1.25@1.28
Islands, coarse	.61@ .64	.64@ .65	.68@ .71
Cametá	.70@ .71	.69@ .71	.71@ .76

In regard to the financial situation, Albert B. Beers (broker in india-rubber and commercial paper, No. 68 William street, New York) advises us: "During August the money market has not been in condition to admit of paper selling freely, and there has been only a very limited demand from out-of-town banks, at anywhere from 6½ to 8 per cent. for the usual run of rubber names."

Statistics of Para Rubber (Excluding Caucho).

	NEW YORK.					
	Fine and Medium.	Coarse.	Total 1907.	Total 1906.	Total 1905.
Stocks, June 30.....*Tons*	231	72 =	303	191	594
Arrivals, July.....	409	286 =	695	980	297
Aggregating	640	358 =	998	1171	891
Deliveries, July.....	413	295 =	708	1024	474
Stocks, July 31.....	227	63 =	290	147	417

	PARA.			ENGLAND.		
	1907.	1906.	1905.	1907.	1906.	1905.
Stocks, June 30...*Tons*	170	130	160	950	905	485
Arrivals, June.....	1090	1300	1420	525	400	580
Aggregating	1260	1330	1580	1475	1305	1065
Deliveries, June.....	1095	954	1340	800	515	675
Stocks, July 30.....	165	376	240	675	790	390

	1907.	1906.	1905.
World's visible supply, July 31.....*Tons*	1659	1841	1741
Pará receipts, July 1 to July 31.....	1090	1300	1420
Pará receipts, Caucho, same dates.....	230	350	170
Afloat Pará to United States, July 31.....	109	193	94
Afloat Pará to Europe, July 31.....	420	335	600

London.

AT THE AUCTIONS.

LONDON, August 9.—About 45 tons of plantation rubber offered—10 from Ceylon and 35 from the Malay States—the principal part finding buyers. The highest price paid was 5*s.* 10*d.* [=$1.41⅞] for Ceará biscuits from Rangbodde estate. There were a few parcels of exceptionally fine crepe, which realized 5*s.* 8*d.* [=$1.37⅞]. Three cases of *Castilloa* plantation from the West Indies brought 3 shillings [=73 cents] per pound. Hard fine Pará to-day, 4*s* 9½*d.* [=$1.16½].

Rubber Scrap Prices.

NEW YORK quotations—prices paid by consumers for carload lots, per pound—show practically no change:

Old rubber boots and shoes—domestic.....	11⅞@12
Old rubber boots and shoes—foreign.....	10¾@11
Pneumatic bicycle tires.....	7½@ 7¾
Automobile tires	9⅞@10
Solid rubber wagon and carriage tires.....	10 @10¼
White trimmed rubber.....	12½@12¾
Heavy black rubber.....	5¾@ 6
Air brake hose.....	4¾@ 5
Fire and large hose.....	3⅝@ 3¾
Garden hose	2½@ 2¾
Matting	1½@ 1⅝

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

JULY 24.—By the steamer *Cuthbert*, from Manàos and Pará:

IMPORTERS.	Fine.	Medium.	Coarse.	Caucho.	Total.
Poel & Arnold.....	31,100	12,500	54,600	.....=	98,200
General Rubber Co.....	36,900	4,700	42,200	12,100=	95,900
New York Commercial Co.....	50,200	9,500	16,700	5,900=	82,300
Edmund Reeks & Co.....	20,700	2,100	27,700	3,500=	54,000
A. T. Morse & Co.....	10,300	1,100	18,600	2,900=	32,900
Hagemeyer & Brunn.....	12,500	.....	5,300	.....=	17,800
Neale & Co.....	5,800	300	9,200	.....=	15,300
C. P. dos Santos.....	.....	.....	4,600	.....=	4,600
Total	167,500	30,200	178,900	24,400=	401,000

AUG. 1.—By the steamer *Obidense*, from Manàos and Pará:

Poel & Arnold.....	34,300	14,000	10,900	300=	60,400
A. T. Morse & Co.....	9,300	1,800	35,700	1,100=	47,900
General Rubber Co.....	.....	.....	36,300	.....=	36,300
Edmund Reeks & Co.....	.....	.....	35,600	.....=	35,600
Hagemeyer & Brunn.....	8,200	.....	9,900	.....=	18,100
New York Commercial Co.....	7,100	1,100	2,600	.....=	10,800
Neale & Co.....	700	.....	3,300	.....=	4,000
C. P. dos Santos.....	.....	.....	2,600	.....=	2,600
Total	59,600	17,800	136,900	1,400=	215,700

JULY 14.—By the steamer *Maranhense*, from Manàos and Pará:

General Rubber Co.....	61,000	5,300	71,800	600=	138,700
New York Commercial Co.....	46,600	7,500	15,500	5,000=	74,600
A. T. Morse & Co.....	28,100	300	5,900	23,500=	57,800
Hagemeyer & Brunn.....	20,300	.....	20,500	.....=	40,800
Edmund Reeks & Co.....	11,800	1,400	22,400	.....=	35,600
Poel & Arnold.....	.....	8,900	21,400	.....=	30,300
Neale & Co.....	2,200	300	21,500	.....=	24,000
Total	170,000	23,700	179,000	29,100=	401,800

AUGUST 24.—By the steamer *Horatio*, from Manàos and Pará:

General Rubber Co.	38,800	16,300	43,800	2,100 =	101,000
New York Commercial Co..	39,800	12,300	19,500	2,700 =	74,300
Poel and Arnold	34,300	13,100	11,500	500 =	59,400
C. P. dos Santos	22,800	9,600	9,200	..... =	41,600
Edmund Reeks & Co...	10,400	1,000	17,900	..... =	29,300
Neale & Co.	1,400	400	20,500	..... =	22,300
A. T. Morse & Co.....	9,400	2,600	200	500 =	12,700
Hagemeyer & Brunn.....	5,400	.....	4,600	..... =	10,000
Total 162,300		55,300	127,200	5,800 =	350,600

[NOTE.—The steamer *Madeirense*, from Pará, is due at New York on September 3, with 115 tons of rubber.]

PARA RUBBER VIA EUROPE.

	POUNDS.	
JULY 24.—By the *Caronia*=Liverpool:		
New York Commercial Co (Fine).	67,000	
New York Com'rcial Co. (Coarse)	16,000	
Poel & Arnold (Medium).....	22,500	
Poel & Arnold (Coarse).....	12,500	
Poel & Arnold (Caucho).....	5,500	
General Rubber Co. (Caucho)....	11,500	135,000
JULY 25.—By the *President Lincoln*=Hamburg:		
New York Commercial Co. (Fine).	11,500	
New York Com'rcial Co. (Coarse)	10,000	21,500
JULY 26.—By the *Netherlanden*=Ciudad Bolivar:		
Thebaud Brothers (Fine).....	28,000	
Thebaud Brothers (Coarse).....	12,000	40,000
JULY 31.—By the *Arabic*=Liverpool:		
New York Com'rcial Co. (Coarse)		6,500
AUG. 1.—By the *Georgic*=Liverpool:		
New York Commercial Co. (Fine).	51,000	
Arana, Bergman Co. (Caucho)...	45,000	96,000
AUG. 3.—By the *Baltic*=Liverpool:		
New York Com'rcial Co. (Medium)	11,500	
Poel & Arnold (Medium).....	2,000	13,500
AUG. 3.—By the *Waldersee*=Hamburg:		
New York Commercial Co (Fine).	8,500	
New York Com'rcial Co. (Caucho)	9,000	17,500
AUG. 6.—By the *Colon*=Mollendo:		
New York Commercial Co. (Fine).	7,000	
A. D. Hitch & Co. (Fine).....	1,000	
F. Rosenstein & Co. (Fine).....	2,500	10,500
AUG. 7.—By the *Carmania*=Liverpool:		
Poel & Arnold (Medium).....	7,000	
Poel & Arnold (Coarse).....	4,500	11,500
AUG. 9.—By the *Prins Willem*=Bolivar, Venezuela:		
G. Amsinck & Co. (Fine).....	34,000	
G. Amsinck & Co. (Coarse).....	20,000	54,000
AUG. 13.—By the *Bovic*=Liverpool:		
Poel & Arnold (Coarse).....	9,000	
Arana, Bergman Co. (Caucho)...	22,500	31,500
AUG. 21.—By the *Caronia*=Liverpool:		
General Rubber Co. (Caucho)....		34,000

OTHER ARRIVALS AT NEW YORK.

CENTRALS.

	POUNDS.	
JULY 22.—By the *El Cid*=Galveston:		
Continental-Mexican Rubber Co...		*22,500
JULY 23.—By the *Panama*=Colon:		
Henry Mann & Co.....	8,500	
Brunner, Mohle & Co.....	5,000	
Hirzel, Feltman & Co.....	4,000	
G. Amsinck & Co.....	2,000	
Maitland, Coppel & Co.....	2,500	
L. Johnson & Co.....	2,000	
Demarest Bros. & Co.....	1,000	25,000
JULY 23.—By the *Tennyson*=Bahia:		
Poel & Arnold.....	23,000	
American Commercial Co.....	27,000	
A. Hirsch & Co.....	22,000	
J. H. Rossback & Bros.....	15,000	
New York Commercial Co.....	5,000	92,000
JULY 24.—By the *Sigismund*=Colon:		
New York Commercial Co.....		3,000
JULY 24.—By the *Caronia*=Liverpool:		
Poel & Arnold.....		11,500
JULY 24.—By the *El Valle*=Galveston:		
Continental-Mexican Rubber Co...		*22,500
JULY 24.—By the *Trent*=Caribbean ports:		
G. Amsinck & Co.....	4,500	
De Lima Cortessa Co.....	2,000	
Kunhardt & Co.....	1,000	
A. Rosenthal's Sons.....	1,000	
Frame & Co.....	1,000	
I. Brandon & Bros.....	1,000	
Escobar-Gorgorza Co.....	1,000	
Aramburo, Incorporated.....	1,000	12,500

CENTRALS—*Continued.*

JULY 27.—By the *Mexico*=Frontera:		
W. Loaiza & Co.....	7,000	
Harburger & Stack.....	4,500	
E. Steiger & Co.....	4,500	
Graham, Hinkley & Co.....	2,000	
H. Marquardt & Co.....	1,000	
Thebaud Brothers	1,000	
American Trading Co.....	500	20,500
JULY 29.—By the *Brunswick*=Colon:		
New York Commercial Co.....	9,500	
G. Amsinck & Co.....	2,000	
I. Brandon & Bros.....	2,000	13,500
JULY 29.—By the *Creole*=New Orleans:		
A. N. Rotholz.....	4,000	
A. T. Morse & Co.....	4,000	8,000
JULY 31.—By the *Joachem*=Colombia:		
D. A. De Lima & Co.....	3,500	
G. Amsinck & Co.....	3,000	
I. Brandon & Bros.....	2,000	
M. Blancho	1,000	
Kunhardt & Co.....	1,000	10,500
AUG. 1.—By the *Obidense*=Ceara:		
Emile Baris		4,000
AUG. 3.—By the *El Mar*=Galveston:		
Continental-Mexican Rubber Co..		*22,500
AUG. 3.—By the *Seguranca*=Mexico:		
Harburger & Stack.....	4,000	
E. Steiger & Co.....	2,500	
E. N. Tibbals Co.....	2,500	
H. Marquardt & Co.....	2,500	
Graham, Hinkley & Co.....	500	12,000
AUG. 5.—By the *Calderon*=Bahia:		
Poel & Arnold.....	40,000	
New York Commercial Co.....	9,000	
J. H. Rossback & Bros.....	4,000	53,000
AUG. 5.—By the *Momus*=New Orleans:		
Manhattan Rubber Mfg. Co.....	2,000	
Andreas & Co.....	1,000	
Eggers & Heinlein.....	500	3,500

CENTRALS—*Continued.*

AUG. 5.—By the *El Alba*=Galveston:

Continental-Mexican Rubber Co..		*22,500

AUG. 6.—By the *Colon*=Colon:

G. Amsinck & Co.	23,000	
New York Commercial Co.	4,000	
I. Brandon & Bros.	3,500	
Demarest Bros. Co.	3,500	
A. Santos & Co.	2,000	
L. Johnson & Co.	2,000	
Hirzel, Feltman & Co.	1,000	
Pablo, Calvet Co.	1,000	
Columbian Trading Co.	1,000	
M. Hecht	1,000	
Andreas & Co.	1,000	43,000

AUG. 6.—By the *Bithel Frederick*=Colombian ports:

New York Commercial Co.	6,000	
A. Held.	5,000	
Leanz & Co.	2,500	
Oacha & Osirio.	2,000	
Kunhardt & Co.	2,000	
J. A. Pauli & Co.	2,000	
American Trading Co.	1,000	
I. Brandon & Bros.	1,000	21,500

AUG. 7.—By the *El Norte*=Galveston:

Continental-Mexican Rubber Co..		*22,500

AUG. 7.—By the *Antilla*=Tampico:

Ed. Maurer	*40,000	
New York Commercial Co.	*28,000	
Continental-Mexican Rubber Co..	*22,500	*90,500

AUG. 9.—By the *Pennsylvania*=Hamburg:

Poel & Arnold.		17,500

AUG. 10.—By the *Merida*=Frontera:

E. Steiger & Co.	2,000	
Graham, Hinkley & Co.	2,000	
Harburger & Stack	1,000	
H. Marquardt & Co.	1,000	6,000

AUG. 12.—By the *El Dia*=New Orleans:

Manhattan Rubber Mfg. Co.	8,500	
A. T. Morse & Co.	6,500	
A. N. Rotholz	1,000	16,000

AUG. 12.—By the *Advance*=Colon:

G. Amsinck & Co.	5,500	
Hirzel, Feltman & Co.	3,500	
New York Commercial Co.	3,000	
Maldonado & Co.	1,500	
Henry Mann & Co.	1,500	
A. Santos & Co.	500	15,500

AUG. 12.—By the *Bayamo*=Tampico:

New York Commercial Co.	*80,000	
Continental-Mexican Rubber Co..	*50,000	
Ed. Maurer	*40,000	
Harburger & Stack	*2,000	*172,000

AUG. 14.—By the *Crown Prince*=Bahia:

A. Hirsch & Co.		11,500

AUG. 14.—By the *Aug. Wilhelm*=Colombia:

D. A. De Lima & Co.	2,500	
H. W. Peabody & Co.	2,500	
Suzarte & Whitney	1,000	
Andreas & Co.	1,000	
Frame & Co.	1,000	
Graham, Hinkley & Co.	1,000	9,000

AUG. 16.—By the *Panama*=Colon:

G. Amsinck & Co.	10,500	
Roldan & Van Sickle	6,000	
New York Commercial Co.	4,500	
Hirzel, Feltman & Co.	4,500	
Demarest Bros. Co.	2,000	
L. Johnson & Co.	1,500	
Jose Julia & Co.	1,000	
Aramburo, Incorporated	1,000	
A. Santos & Co.	500	
E. B. Strout.	500	32,000

AUG. 19.—By the *El Siglo*=Galveston:

Continental-Mexican Rubber Co..		*75,000

AUG. 19.—By the *Vigilancia*=Tampico:

Edward Maurer		*56,000

AUG. 20.—By the *Dunotar*=Colon:

Piza, Nephews Co.	3,000	
Oachoa & Osirio.	1,000	4,000

AUG. 20.—By the *Spartan Prince*=Bahia:

Poel & Arnold.	45,000	
New York Commercial Co.	9,000	
J. H. Rossback & Bros.	9,000	63,000

AUG. 21.—By the *Sigismund*=Colon:

Hirzel, Feltman & Co.	7,000	
L. Johnson & Co.	1,500	
G. Amsinck & Co.	1,500	
Suzarte & Whitney	1,000	11,000

AUG. 21.—By the *Byron*=Bahia:

General Rubber Co.	11,500	
A. Hirsch & Co.	11,500	
Poel & Arnold	3,500	26,500

AUG. 22.—By the *El Alba*=Galveston:

Continental-Mexican Rubber Co..		*45,000

AUG. 23.—By the *Sarnia*=Colombia:

G. Amsinck & Co.	3,500	
American Trading Co.	1,500	

CENTRALS—*Continued.*

De Lima, Cortessa Co.	1,000	6,000

AUG. 23.—By the *Proteus*=New Orleans:

G. Amsinck & Co.		3,000

*This sign, in connection with imports of Centrals, denotes Guayule rubber.

AFRICANS.

POUNDS.

JULY 22.—By the *Armenian*=Liverpool:

Livesey & Co.	5,500	
George A. Alden & Co.	2,500	
Poel & Arnold.	3,000	11,000

JULY 24.—By the *Finland*=Antwerp:

General Rubber Co.		15,000

JULY 24.—By the *Caronia*—Liverpool:

George A. Alden & Co.	8,000	
Livesey & Co.	4,500	12,500

JULY 25.—By the *President Lincoln*=Hamburg:

A. T. Morse & Co.	26,000	
George A. Alden & Co.	25,000	51,000

JULY 26.—By the *Staterdyk*=Rotterdam:

A. T. Morse & Co.		6,500

JULY 27.—By the *Touraine*=Havre:

George A. Alden & Co.		17,000

JULY 27.—By the *Arabic*=Liverpool:

A. T. Morse & Co.	11,500	
Livesey & Co.	3,500	
George A. Alden & Co.	16,000	
Poel & Arnold.	9,000	40,000

JULY 30.—By the *Vaderland*=Antwerp:

Robinson & Stiles.	13,500	
George A. Alden & Co.	5,500	19,000

AUG. 1.—By the *Georgic*=Liverpool:

General Rubber Co.	168,000	
Poel & Arnold.	45,000	
George A. Alden & Co.	22,500	235,500

AUG. 3.—By the *Baltic*=Liverpool:

George A. Alden & Co.	8,000	
A. T. Morse & Co.	9,000	17,000

AUG. 3.—By the *Waldersee*=Hamburg:

George A. Alden & Co.	65,000	
A. T. Morse & Co.	45,000	110,000

AUG. 5.—By the *New York*=London:

Poel & Arnold.	7,000	
W. L. Gough Co.	9,000	16,000

AUG. 6.—By the *Loustaken*=Lisbon:

General Rubber Co.		115,000

AUG. 6.—By the *Kroonland*=Antwerp:

Poel & Arnold.	115,000	
A. T. Morse & Co.	55,000	
Rubber Trading Co.	15,000	
Henry A. Gould Co.	2,000	187,000

AUG. 7.—By the *Carmania*=Liverpool:

George A. Alden & Co.	20,000	
Livesey & Co.	2,000	
Poel & Arnold.	2,000	24,000

AUG. 8.—By the *Adriatic*=London:

George A. Alden & Co.		5,000

AUG. 9.—By the *Pennsylvania*—Hamburg:

A. T. Morse & Co.	11,500	
Poel & Arnold.	5,500	
Rubber Trading Co.	4,500	
W. L. Gough Co.	4,500	26,000

AUG. 10.—By the *Cedric*=Liverpool:

George A. Alden & Co.	45,000	
Livesey & Co.	2,500	47,500

AUG. 15.—By the *Peninsular*=Lisbon:

General Rubber Co.		56,000

AUG. 17.—By the *Bosnia*=Hamburg:

A. T. Morse & Co.	28,000	
W. L. Gough Co.	4,500	
George A. Alden & Co.	3,000	35,500

AUG. 17.—By the *Lucania*=Liverpool:

George A. Alden & Co.	6,000	
Livesey & Co.	7,000	13,000

AUG. 21.—By the *Caronia*=Liverpool:

General Rubber Co.	65,000	
Poel & Arnold.	17,000	
George A. Alden & Co.	11,500	
Livesey & Co.	5,500	99,000

EAST INDIAN.

POUNDS.

JULY 22.—By the *Minnetonka*=London:

General Rubber Co.		22,500

JULY 24.—By the *Oceanic*=London:

Poel & Arnold.	5,500	
A. T. Morse & Co.	*1,500	
Poel & Arnold.	*3,500	10,500

JULY 25.—By the *Erroll*=Singapore:

Heabler & Co.		22,800

JULY 29.—By the *Minneapolis*=London:

General Rubber Co.		5,000

AUG. 2.—By the *Clare MacIntyre*=Colombo:

A. T. Morse & Co.		*14,000

EAST INDIAN—*Continued.*

AUG. 5.—By the *New York*=London:

Poel & Arnold.	9,000	
Poel & Arnold.	*3,500	12,500

AUG. 6.—By the *Minnehaha*=London:

George A. Alden & Co.	7,000	
A. T. Morse & Co.	*2,000	9,000

AUG. 10.—By the *Shimosa*=Singapore:

Poel & Arnold.	20,000	
H. Pauli	11,500	
W. L. Gough Co.	5,500	37,000

AUG. 12.—By the *Gutenfels*=Colombo:

A. T. Morse & Co.		*22,500

AUG. 13.—By the *Indramayo*—Singapore:

Heabler & Co.	55,000	
Joseph Cantor	10,000	
W. L. Gough Co.	11,000	76,000

AUG. 14.—By the *Mesaba*=London:

General Rubber Co.	*13,500	
Robinson & Stiles.	2,500	16,000

AUG. 20.—By the *Lennox*=Singapore:

Joseph Cantor		13,500

*Denotes Plantation Rubber.

GUTTA-JELUTONG.

JULY 25.—By the *Jeseric*=Singapore:

M. Joachemsen		75,000

JULY 25.—By the *Staterdyk*=Rotterdam:

William Tappenbach		35,000

JULY 25.—By the *Erroll*=Singapore:

Heabler & Co.	250,000	
William Tappenback	225,000	
George A. Alden & Co.	110,000	
M. Joachemsen	125,000	710,000

AUG. 10.—By the *Shimosa*=Singapore:

Heabler & Co.	325,000	
George A. Alden & Co.	300,000	
W. L. Gough Co.	110,000	
M. Joachemsen	110,000	845,000

AUG. 13.—By the *Staatendam*=Rotterdam:

A. T. Morse & Co.		30,000

AUG. 13.—By the *Indramago*=Singapore:

W. L. Gough Co.	350,000	
Heabler & Co.	150,000	
George A. Alden & Co.	115,000	
M. Joachemsen	110,000	725,000

AUG. 20.—By the *Lennox*=Singapore:

Heabler & Co.	380,000	
W. L. Gough Co.	300,000	
J. H. Recknagel Co.	110,000	
George A. Alden & Co.	110,000	
Winter & Smillie	125,000	
William Tappenbach	125,000	1,150,000

GUTTA-PERCHA.

POUNDS.

JULY 25.—By the *Erroll*=Singapore:

Heabler & Co.	27,000	
H. Pauli	35,000	62,000

AUG. 3.—By the *Waldersee*=Hamburg:

Robert Soltau		7,000

AUG. 10.—By the *Shimosa*=Singapore:

H. Pauli		22,500

AUG. 13.—By the *Indramago*=Singapore:

Heabler & Co.		55,000

BALATA.

JULY 26.—By the *Netherlander*=Trinidad:

Thebaud Brothers		11,500

AUG. 3.—By the *Maracas*=Trinidad:

Frame & Co.		4,500

AUG. 9.—By the *Manoa*=Demerara:

Middleton & Co.	28,000	
Frame & Co.	9,000	
A. T. Morse & Co.	5,000	
George A. Alden & Co.	3,000	45,000

AUG. 9.—By the *Prins Willem*=Ciudad Bolivar:

G. Amsinck & Co.		22,500

AUG. 12.—By the *Maraval*=Trinidad:

Frame & Co.		11,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JULY.

Imports:	Pounds.	Value.
India-rubber	2,759,599	$2,835,303
Balata	52,710	21,390
Gutta-percha	9,096	6,400
Gutta-jelutong (Pontianak)	1,590,889	73,481
Total	4,412,294	$2,936,664
Exports:		
India-rubber	230,179	$204,726
Reclaimed rubber	107,786	15,370
Rubber Scrap Imported	2,836,596	$278,204

INDIA RUBBER WORLD

Vol. 36. SEPTEMBER 1, 1907. No. 6.

TABLE OF CONTENTS

Editorial: PAGE.

The New Rubber Factories ... 361
Belgium and the Congo ... 361
A Libel on Rubber Tires ... 362
The Good Old Word "Rubber" ... 362
Minor Editorial ... 363

Rubber in the Noiseless City ... 363

American Waste Rubber Trade ... 364

The Insulated Tire Manufacture—II.
A Practical Man 365

The India-Rubber Trade in Great Britain.
Our Regular Correspondent 367

[British Exports of Rubber Goods. Factory Inspection. Solvent Prices. Society of Chemical Industry. Waterproof Branch. The Steam Brush Co. Tyre vs. Tire. Leather Substitutes. Personal Notes.]

The Amazon Rubber Movement ... 368

Progress of Rubber Planting ... 369

[Another Sumatra Company. A Rubber Factory Opening. Planting Enterprise in Borneo. A Practical Tapping Tool. Mexican Planting Notes.]
[With 3 Illustrations.]

New Rubber Planting Companies ... 371

A Pioneer in the Guayule Field ... 372

[With Portrait of Felix H. Hunicke.]

Guayule Trade Notes ... 372

New Rubber Goods in the Market ... 373

["Ideal" Automatic Water Saver. "Draper" Automatic Robe. Indoor Shot and Rubber Quoits. "Minute" Tire Tool. "Empire" Tube Case. Rubber Air Cushion Receiver Caps. Interchangeable Rubber Heel. The "Ideal" Motor Lap Robe. Rubber Reeling and Rod Grip.]
[With 13 Illustrations.]

Recent Patents Relating to Rubber ... 375

[United States. Great Britain. France.]

Fruits That Bear Rubber ... 377

[With 4 Illustrations.]

A Colombian Rubber Merchant ... 379

[With Portrait of Fidel Cuello.]

Obituary—Henry F. Doherty ... 384

Miscellaneous:

Care in Handling Rubber Cement ... 364
Attempt to Tax Waste Rubber ... 366
New Trade Publications ... 366
A Story by Colonel Colt ... 368
Cotton in the Census ... 379

News of the American Rubber Trade ... 384

[With 2 Illustrations.]

The Trade at Akron ... *Our Correspondent* 380
The Trade in San Francisco ... *Our Correspondent* 380

Review of the Crude Rubber Market ... 389

Liverpool

WILLIAM WRIGHT & CO. report [August 1]:

Fine Pará.—Owing to small receipts and an active demand, prices quickly advanced during the first half of the month, Bolivian fine touching 4*s.* 11*d.* and Upriver fine 4*s.* 10½*d.*, a large business being done spot and for delivery. The second half of the month prices fell away somewhat, chiefly owing to the absence of trade demand. Contrary to last year the whole of the crop has been forwarded to ports of shipment, consequently the supplies during the early months of the crop are not expected to reach last year's total. If this is so an advance in prices is more likely than a decline.

EDMUND SCHLUTER & CO. report [July 31]:

Pará Rubber.—Pará grades were active during the first two weeks of July, and owing to speculation prices advanced about 3½*d.* per pound. Subsequently realizations and renewed selling by importers and speculators caused a decline, and the market closed quiet but steady. The decrease in the July receipts and the possibility of only moderate supplies in August may cause increased demand by dealers and possibly some rise in prices during the near future. Later in the season the normal increase of supplies at the Amazon ports should make for a more even market, free from violent fluctuations.

WORLD'S VISIBLE SUPPLY OF PARA, JULY 31.

	1907.	1906.	1905.	1904.	1903.	1902.
Tons	2882	2830	2275	1665	2550	3334
Prices, hard, fine.	4/9½	5/2¼	5/6¼	4/11¾	4/0½	2/10½

LIVERPOOL STOCKS OF AFRICAN RUBBER, JULY 31.

1907	289	1904	473	1901	728
1906	388	1903	371	1900	823
1905	371	1902	516	1899	479

Plantation Rubber From the Far East.

CEYLON WEEKLY EXPORTS.

WEEK ending June 24—18,285 pounds; week ending July 1—15,800 pounds. Previously reported, 288,178; total since January 1—322,263 pounds. Total to and including July 1, deducting rubber not the produce of Ceylon, 202,636 pounds. Same months in 1906—139,697 pounds; same months 1905—49,773 pounds; same months 1904—35,299 pounds.

SHIPMENTS FROM THE STRAITS—JAN. 1 TO JUNE 30.

	Pounds.		Pounds.
Great Britain	537,600	Australia	14,267
Europe	41,134	Ceylon	76,267
United States	400		
Japan	23,594	Total	693,162

[From Singapore, 631,368; from Penang, 61,894.]

The above figures point to the total export of plantation rubber from Ceylon and the Malay peninsula for the first six months of the year amounting to 865,898 pounds. The total for 1906 was reported at 1,144,295 pounds and for 1905 at 397,047 pounds.

OFFICIAL STATISTICS OF RUBBER (IN POUNDS).

UNITED STATES.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
June, 1907	5,274,438	408,159	4,866,279
January-May	37,313,652	1,837,377	35,476,275
Six months, 1907	42,588,090	2,245,536	40,342,554
Six months, 1906	33,402,890	1,783,648	31,709,242
Six months, 1905	39,834,796	1,574,030	38,260,766

GERMANY.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
June, 1907	2,874,520	811,580	2,062,940
January-May	15,939,880	5,396,820	10,543,060
Six months, 1907	18,814,400	6,208,400	12,606,000
Six months, 1906	20,410,720	5,409,140	15,001,580
Six months, 1905	22,835,120	7,363,840	15,471,280

FRANCE.*

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
June, 1907	2,399,760	1,830,180	569,580
January-May	14,925,460	9,319,200	5,606,260
Six months, 1907	17,325,220	11,149,380	6,175,840
Six months, 1906	17,757,740	8,511,800	9,245,940
Six months, 1905	14,586,000	7,923,520	6,662,480

BELGIUM.†

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
June, 1907	1,289,710	1,038,780	250,930
January-May	8,094,402	5,133,052	2,961,350
Six months, 1907	9,384,112	6,171,832	3,212,280
Six months, 1906	10,437,765	6,653,094	3,784,671
Six months, 1905	8,847,086	6,623,102	2,223,984

GREAT BRITAIN.

MONTHS.	IMPORTS.	EXPORTS.	NET IMPORTS.
June, 1907	4,933,712	3,192,112	1,741,600
January-May	36,932,336	17,344,320	19,588,016
Six months, 1907	41,866,048	20,536,432	21,329,616
Six months, 1906	34,477,744	18,736,480	15,741,264
Six months, 1905	32,678,688	18,032,680	14,646,008

NOTE.—German statistics before Jan. 1, 1906, include, gutta-percha, Balata, old (waste) rubber. British figures include old rubber. French, Austrian and Italian figures include gutta-percha. The exports from the United States embrace the supplies for Canadian consumption.

*General Commerce. †Special Commerce.

FORSYTH PATENT FOR PACKING WITH PLIABLE SHEET METAL INSERTION, SUSTAINED BY THE COURTS

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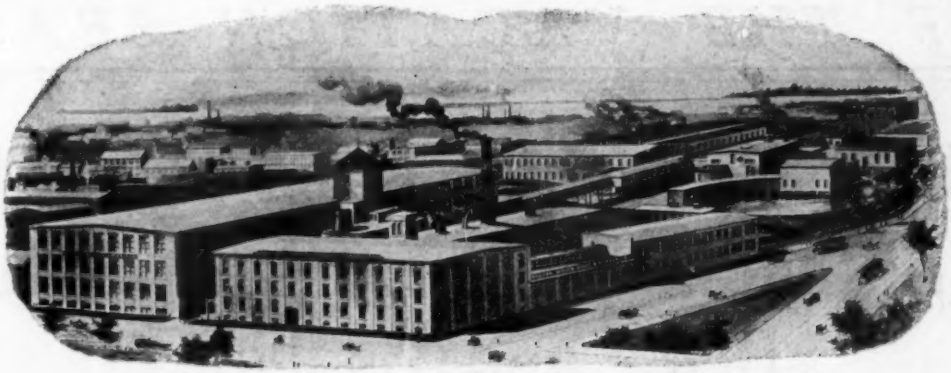

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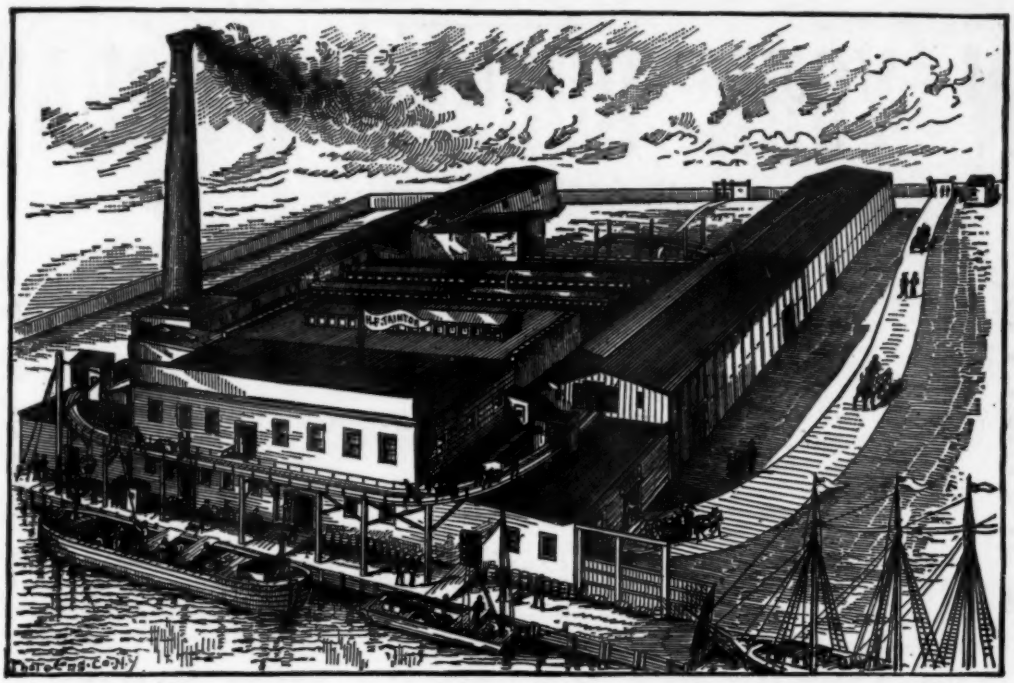

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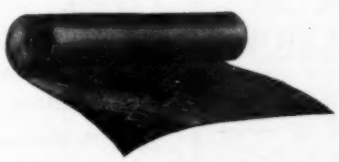

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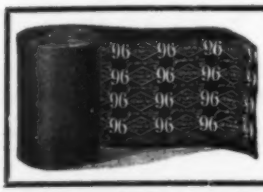

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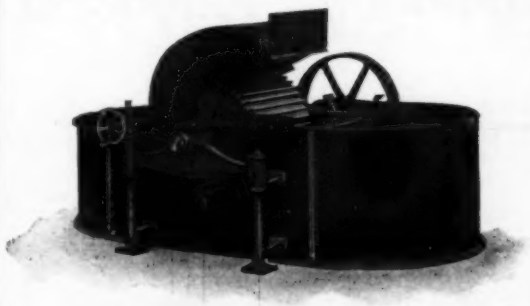

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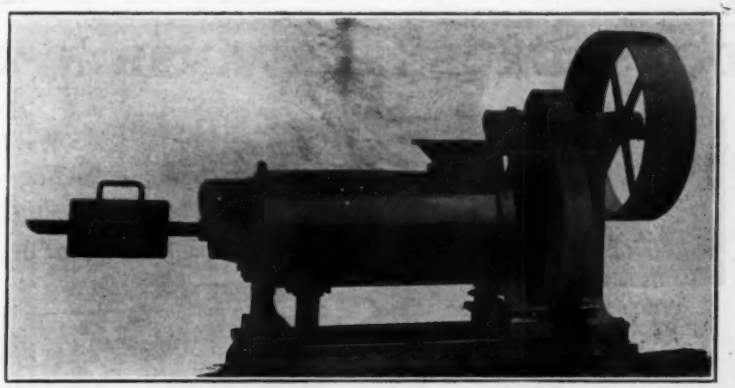

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Dods Packing, made from high grade Rubber and Duck on the bias, placed at a diagonal from every side, has a cross expansion of **100 per cent.**; it will hold steam or liquid when all others fail.

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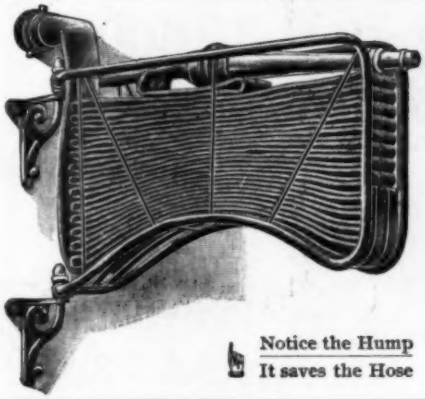

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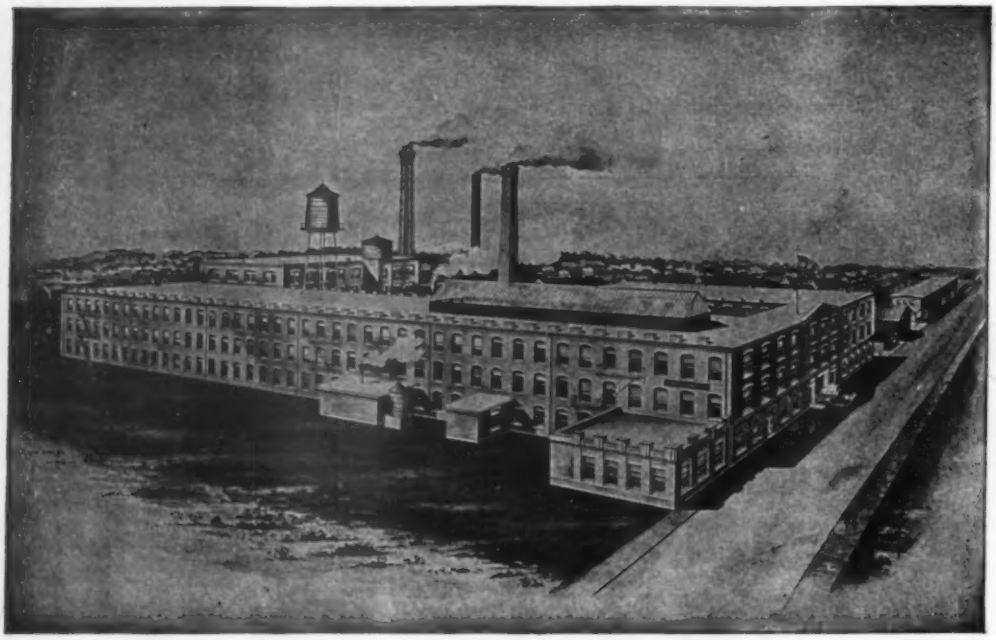

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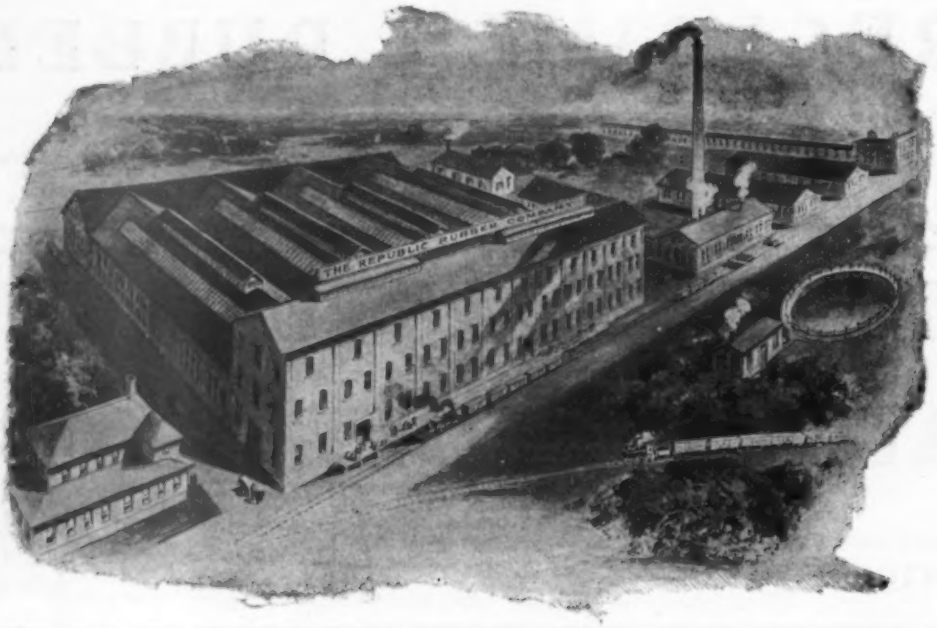

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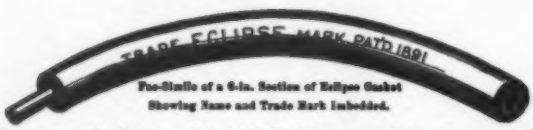

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The Eclipse Gasket is red in color, and composed of the celebrated Rainbow Packing Compound. It will not harden under any degree of heat, or blow out under the highest pressure, and can be taken out and repeatedly replaced.
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It will hold 400 pounds of steam.

Once Tried Always Used.

Will run twelve months in high speed engines.

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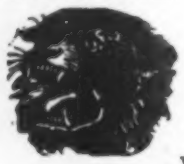

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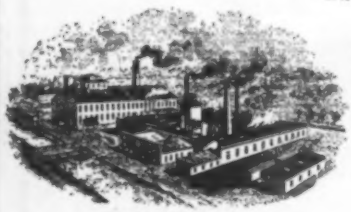

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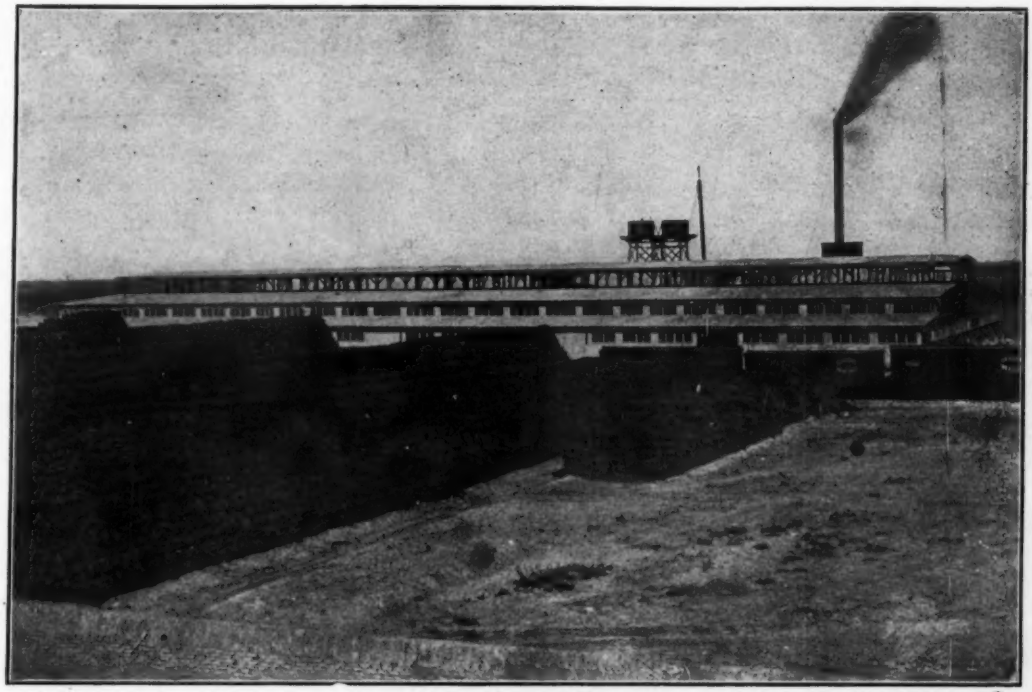

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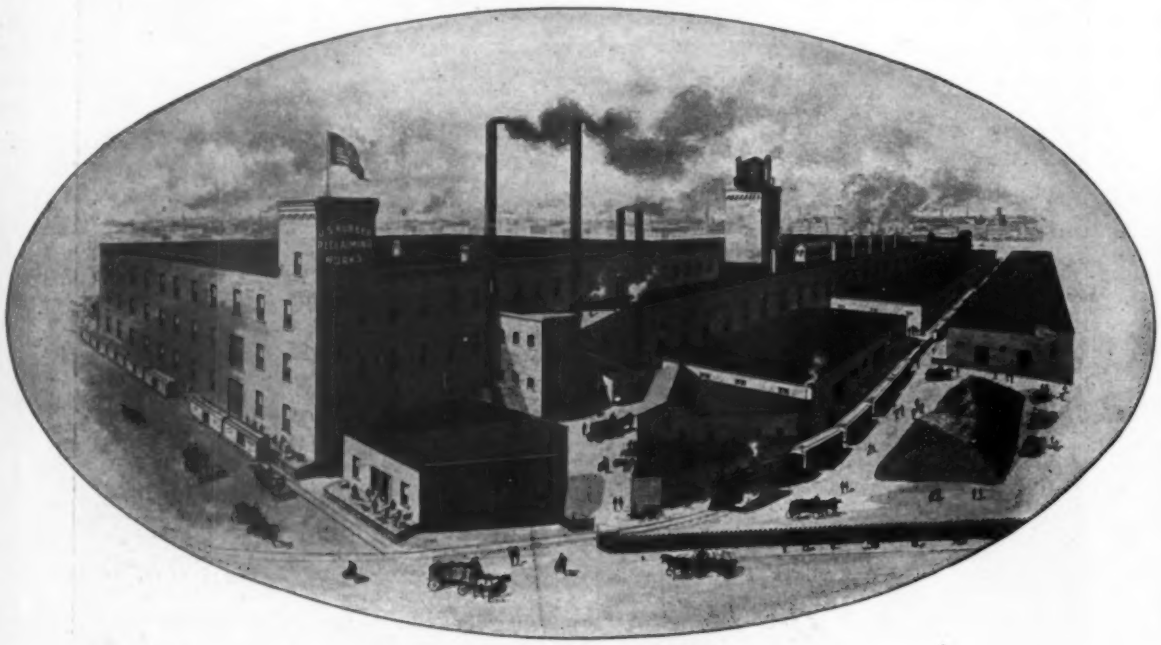

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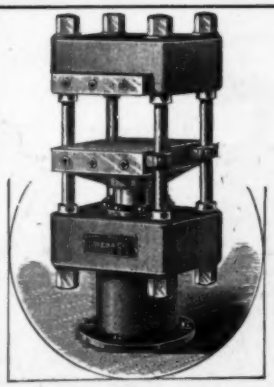

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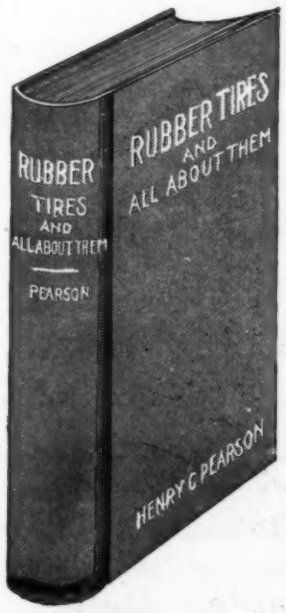

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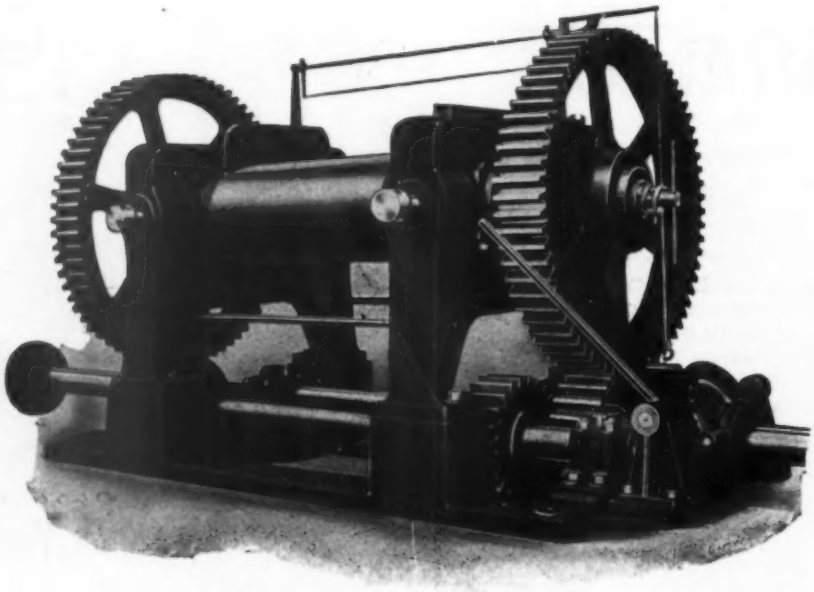

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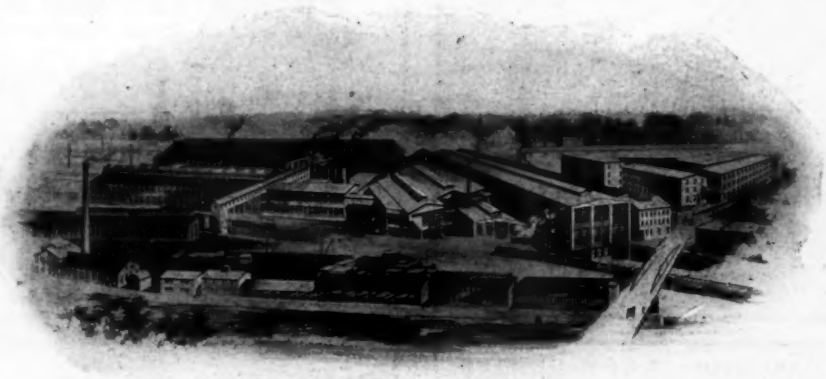

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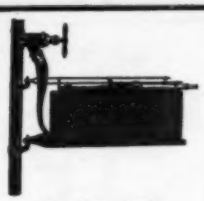
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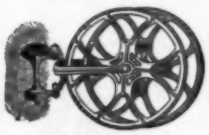
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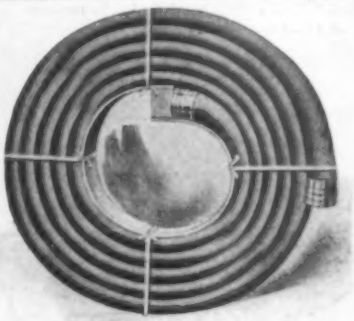

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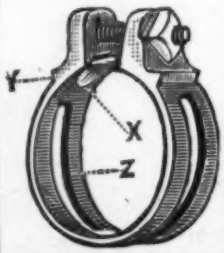

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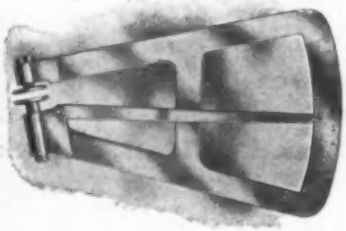

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(CONTINUED ON NEXT PAGE)

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(CONTINUED FROM PRECEDING PAGE)

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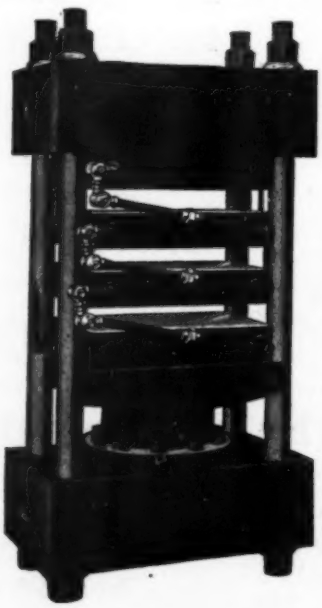

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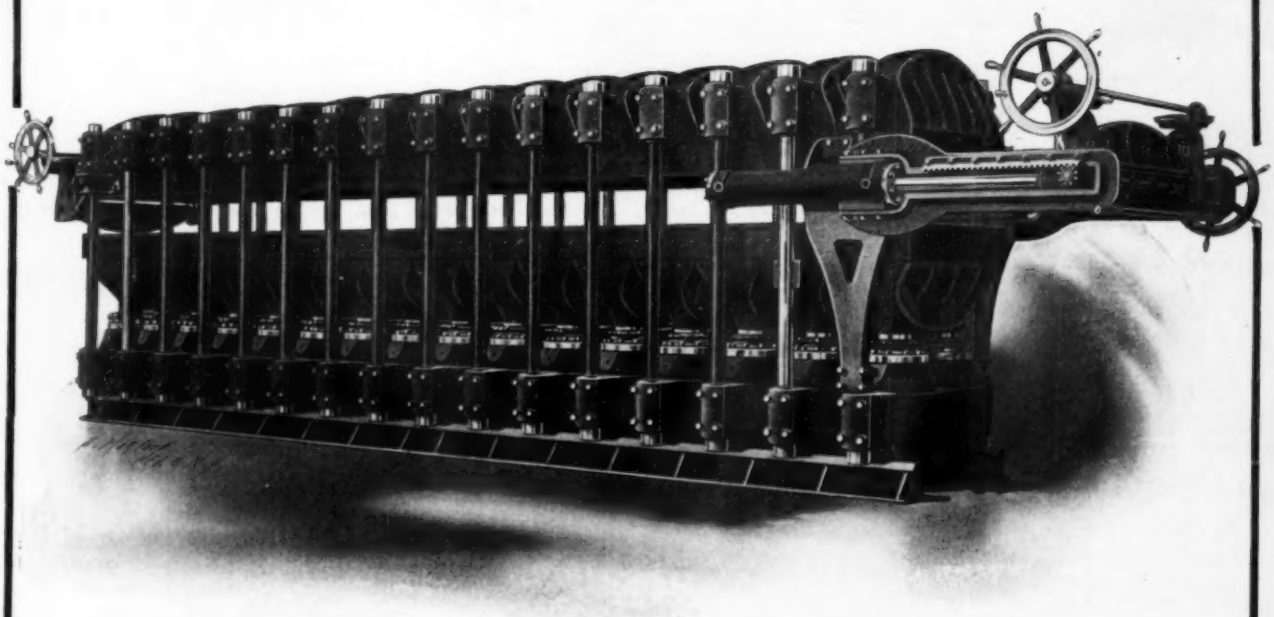

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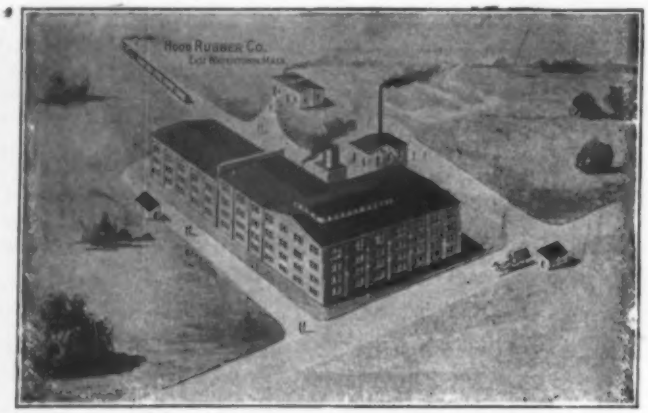

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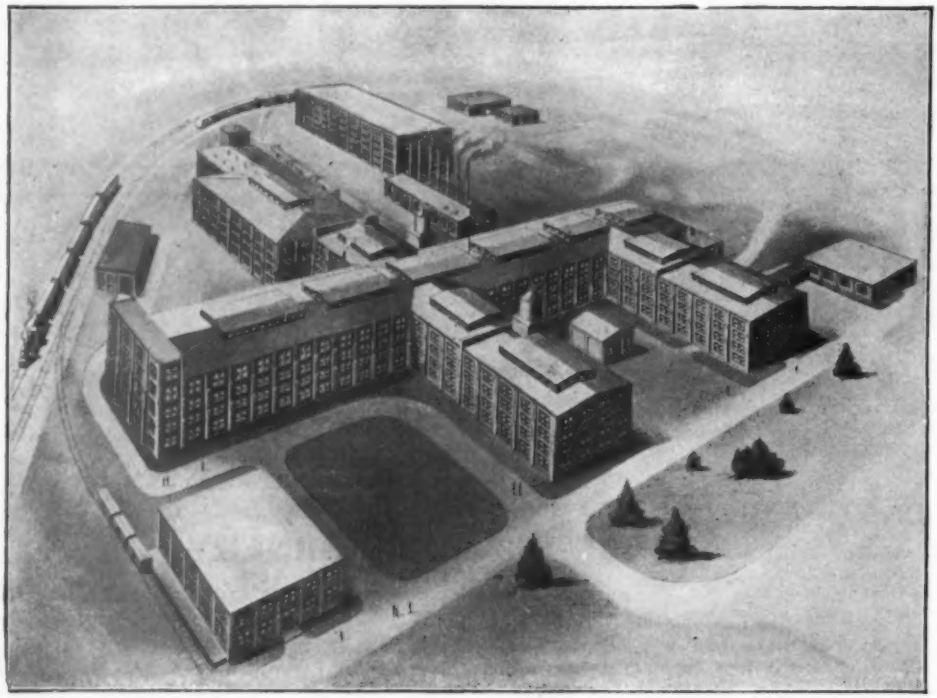

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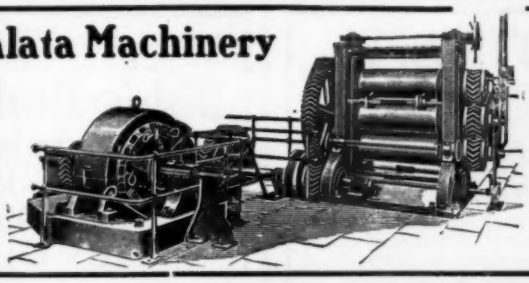

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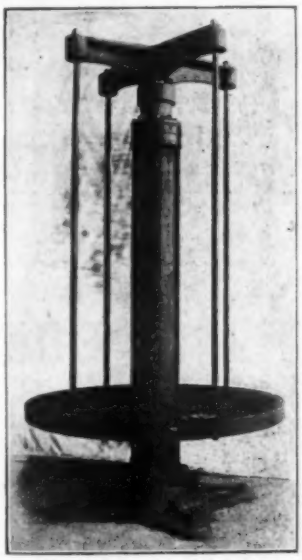

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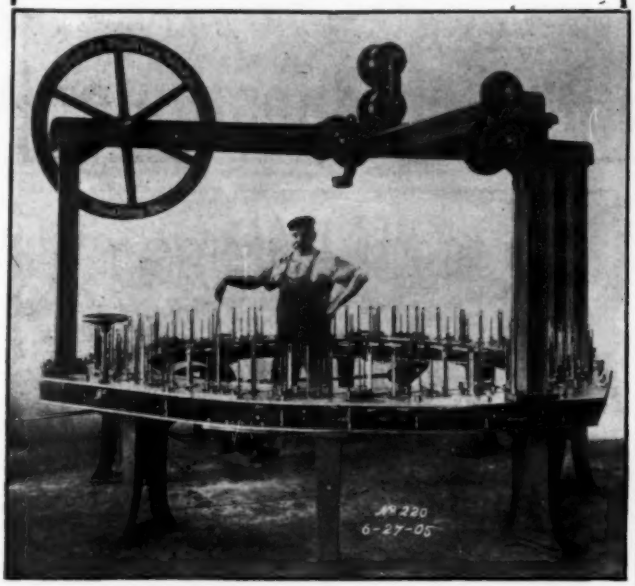

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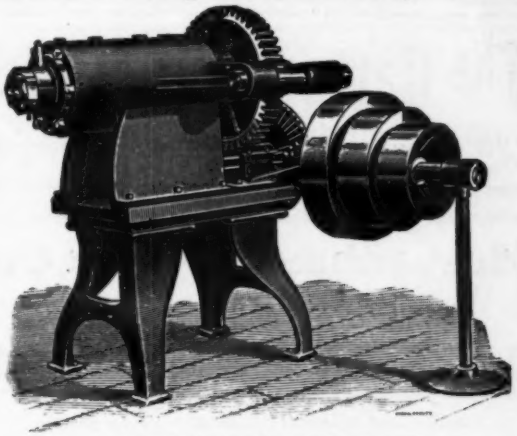

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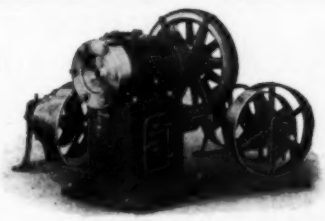

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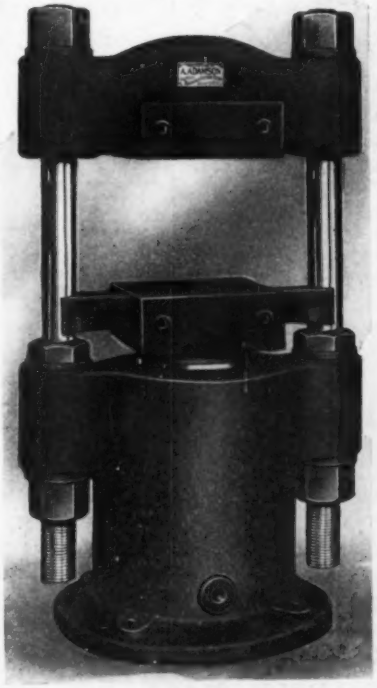

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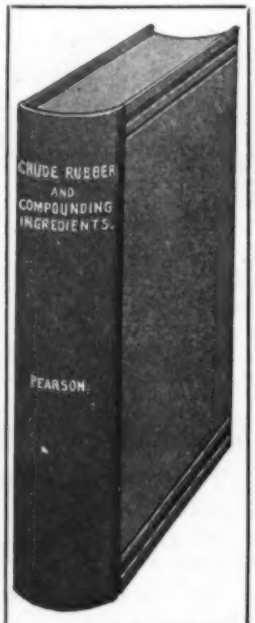

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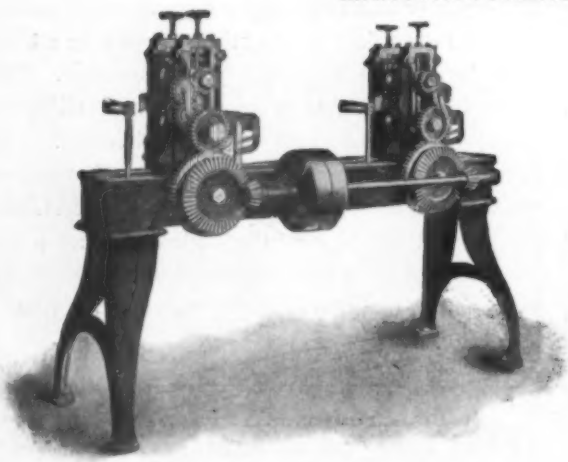

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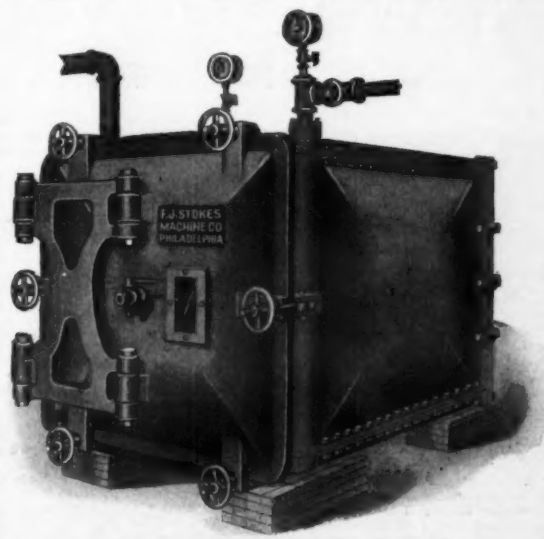

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INDEX TO ADVERTISERS

A

	Page.
Acme Rubber Mfg. Co.	11
Adams, John J.	30
Adamson, A.	47
Alton Machine Co.	34
Akron Rubber Works	19
Aladdin Rubber Co.	25
Albert & Son, L.	26
Alden & Co., Geo. A.	9-23
Alligator Crate Co.	36
Alkali Rubber Co.	23
Allen Mfg. Co., W. D.	36
Allen Mfg. Co.	41
Aluminum Flake Co.	48
American Hard Rubber Co.	13
American Process Co.	25
American Tool & Machine Co.	33
Appleton & Son, F. H.	15
Ashley & Co., T. C.	28
Atlas Chemical Co.	15

B

Bailey & Co., C. J.	14
Battelle & Renwick	28
Bay State Machine Co.	47
Bers & Co.	27
Bersen, M., & Co.	26
Biggs Boiler Works Co.	46
Birkenstein & Sons, S.	26
Birmingham Iron Foundry	43
Bloomingdale Soft Rubber Wks.	6
Boomer & Boschert Press Co.	33
Borgfeldt & Co., Geo.	16
Boston Belting Co.	3
Boston Die Co.	1
Boston Woven Hose & Rubber Co.	5
Bowers Rubber Co.	12
Bridge, David, & Co.	45
Bristol Co.	1
Brunn & Co., A. W.	26

C

Cabot, Samuel	1
Canadian Rubber Co. of Montreal	2
Canfield Co., H. O.	56
Canton Rubber Co.	49
Cantor, Joseph	29
Carter Bell Mfg. Co.	48
Challamel, Augustin	46
Chicago Rubber Works	20
Cincinnati Rubber Mfg. Co.	9
Clapp Rubber Co., E. H.	57
Clark, Edred W.	47
Cleveland Rubber Works	—
Continental Caoutchouc & Gutta Percha Co.	13
Continental Rubber Co.	31
Continental Rubber Works	50
Cravenette Co., Ltd.	1
Crooke, Robert L.	26
Cummings & Sons, Wm. H.	27

D

Danversport Rubber Co.	24
Davidson Rubber Co.	59
Davol Rubber Co.	14
Dayton Rubber Mfg. Co.	49
Derby Rubber Co.	24
Dermatine Co., Ltd.	46
Devine, Joseph P.	40
Dixon Crucible Co., Jos.	46
Dos Santos, C. P.	28
Dunlop Tire & Rubber Goods Co.	13

E

Eastern Reclaimed Rubber Co.	25
Egestorff's (Georg) Salzwerke	29
Electric Hose & Rubber Co.	2
Empire Rubber Mfg. Co.	4
Eureka Fire Hose Co.	4

F

Fabric Fire Hose Co.	4
Farrel Foundry & Machine Co.	35
Farrington, C. E.	20
Faultless Rubber Co.	20
Fillingham, M. P.	37

G

Gabriel & Schall	29
Goodrich Co., B. F.	19
Gough Co., Wallace L.	23
Green & Shonberg	26
Gummi-Zeitung	46
Gutta Percha & Rubber Mfg. Co.	60
Gutta Percha & Rubber Mfg. Co., Toronto	59

H

Hagemeyer & Brunn	26
Hanover Rubber Co.	16
Hirsch & Co., A.	2
Hitch & Co., Allerton D.	28
Hodgman Rubber Co.	6
Hofeller & Co., Theodore	27
Hoggson & Pettis Mfg. Co.	36
Home Rubber Co.	9
Hood Rubber Co.	44, 60
Household Rubber Co.	15
Hygeia Nursing Bottle Co.	37

I

Imperial Rubber Mfg. Co.	37
India Rubber Pub. Co., 13, 27, 33, 38, 39,	48

J

Jenkins Bros.	10
"Journal d'Agriculture Tropicale"	59

K

Kaufman, M.	26
Kokomo Rubber Co.	45
Krumbholz, Paul	37
Kush, Gustave	10

L

La Crosse Rubber Mills Co.	22
Lake Shore Rubber Co.	12
Lane & Co., J. H.	40
Lang, John	37
Le Caoutchouc & La Gutta Percha	51
Leslie, A. W.	27
Livesey & Co., Ltd.	50
Loewenthal & Co., B.	2
Loewenthal & Sons, J.	26
Luserne Rubber Co., The	15
Lycoming Rubber Co.	17

M

McGrory, Philip	27
Manhattan Rubber Mfg. Co.	12
Manufactured Rubber Co.	25
Mason Regulator Co.	40
Massachusetts Chemical Co.	48
Massachusetts Talc Co.	48
Metropolitan Air Goods Co.	51
Mattson Rubber Co.	14
Maurer, Ed.	42
Mechanical Fabric Co.	12
Mechanical Rubber Co.	20
Meyer Bros.	26
Middlesex Last Co.	45
Milford Rubber Works	10
Mitsel Rubber Co.	15
Moers, Albert A.	26

N

N. Tire Rubber Sponge Co.	37
National India Rubber Co.	45
New England Butt Co.	50
New Jersey Car Spring & Rubber Co.	10
New Jersey Rubber Co.	24
New Jersey Zinc Co.	28
New York Belting & Packing Co.	20
New York Rubber Co.	8
North British Rubber Co., Ltd.	49
Norton & Co., M.	26

O

Oxford Tripoli Co.	49

P

Parser, E., & Brodsky	29
Peerless Rubber Mfg. Co.	18
Pequanoc Rubber Co.	23
Perrin, Wm. R., & Co.	40
Peru-Para Rubber Co.	49
Philadelphia Rubber Works	30
Picher Lead Co.	21
Pirelli & Co.	33
Plymouth Rubber Co.	14
Post, Charles Johnson	10

R

Raven Mining Co.	50
Raw Products Co.	60
Republic Rubber Co.	16
Revere Rubber Co.	58
Rickaby Rubber Mfg. Co.	49
Robinson & Stiles	37
Royle & Sons, John	1
Rubber Chemical Co., Ltd.	48
Rubber Trading Co.	21
Rubber Products Co.	15

S

S. & L. Rubber Co.	25
Sayen, Osgood	2
Scheel, Wm. H.	2
Schnurmann, J.	27
Schrader's Sons, Inc., A.	20
Schwab & Co.	27
Seamless Rubber Co.	16
Sharples, Stephen P.	49
Sheip Mfg. Co., Henry H.	45
Spealght, Geo. W.	28
Stamford Rubber Supply Co.	29
Stockton Rubber Co.	24
Stokes, F. J., Machine Co.	51
Stokes Rubber Co., Jos.	15

T

Taintor Mfg. Co., H. F.	7
Textile-Finishing Machinery Co.	47
Textile Machine Works	47
Thropp's Sons Co., John E.	46
Thropp, William R.	46
Trenton Gutta Percha and Separating Co.	26
Trenton Rubber Mfg. Co.	8
Trenton Rubber Reclaiming Wks.	27
Trenton Scrap Rubber Supply Co.	26
"Tropical Agriculturist"	59
Turner, Vaughn & Taylor Co.	11
Tyer Rubber Co.	60
Typke & King	29

U

United States Rubber Co.	17
U. S. Rubber Reclaiming Wks.	32
U. S. Waste Rubber Co.	41

V

Van den Kerckhove	56
Voorhees Rubber Mfg. Co.	5

W

Wanted and For Sale	41
Weld Mfg. Co.	1
Wellman Co.	36
Western Rubber Works	10
Westmoreland Rubber Mfg. Co.	24
Wetherill Co., S. P.	29
White, T. & S. C. Co.	28
Williams Foundry & Machine Co.	36
Williams & Bros., J. P.	51
Wirt & Knox Mfg. Co.	13
Wolpert, M. J.	21

Y

Yerdon, William	36

MECHANICAL RUBBER GOODS.

Belting.
Diaphragms.
Gaskets.
Hose (Fire, Garden, Steam).
Mats and Matting.
Mould Work.
Packing.
Tubing.
Valves.
Washers.

Mechanical Rubber Goods—General.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Bowers Rubber Co., San Francisco, Cal.
Canadian Rubber Co. of Montreal.
H. O. Canfield Co., Bridgeport, Ct.
Chicago Rubber Wks., Chicago.
Cincinnati Rubber Mfg. Co., Cincinnati.
Cleveland Rubber Co., Cleveland, O.
Continental Caoutchouc & Guttapercha Co., Hanover, Germany.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
The Dermatine Co., London.
Dunlop Tire & Rubber Goods Co., Toronto.

Mechanical Goods—General.—Continued.

Empire Rubber Mfg. Co., Trenton, N. J.
Eureka Fire Hose Co., New York.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Gutta Percha & Rubber Mfg. Co., Toronto.
Home Rubber Co., Trenton, N. J.
Lake Shore Rubber Co., Erie, Pa.
Manhattan Rubber Mfg. Co., New York.
Massachusetts Chemical Co., Walpole, Mass.
Mechanical Rubber Co., New York.
National India-Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
North British Rubber Co., Ltd., Edinburgh.
Peerless Rubber Mfg. Co., New York.
Pirelli & Co., Milan, Italy.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston.
Standard Rubber Co., Trenton, N. J.
Jos. Stokes Rubber Co., Trenton, N. J.
Trenton Rubber Mfg. Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City.
Western Rubber Co., Goshen, Ind.

Air Brake Hose.

Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Electric Hose & Rubber Co., Wilmington, Del.
Acme Rubber Mfg. Co., Trenton.
B. F. Goodrich Co., Akron, O.

Air Brake Hose—Continued.

Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Belting (Canvas).

Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Eureka Fire Hose Co., New York.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston-New York.

Billiard Cushions.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Manhattan Rubber Mfg. Co., New York.
New York Belting & Packing Co., Ltd.
New York Rubber Co., New York.
Revere Rubber Co., Boston-New York.

Blankets—Printers'.

Peerless Rubber Mfg. Co., New York.
Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.

Blankets—Printers'.—Continued.

Gutta Percha & Rubber Mfg. Co., N. Y.
Hodgman Rubber Co., New York.
Gustave Kush, New York.
Revere Rubber Co., Boston-New York.
Voorhees Mfg. Co., Jersey City.

Brushes.

Allen Mfg. Co., Toledo, Ohio.
Boston Woven Hose & Rubber Co.
C. J. Bailey & Co., Boston.

Buffers.

Boston Belting Co., Boston-New York.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
Revere Rubber Co., Boston, Mass.

Card Cloths.

Canadian Rubber Co. of Montreal.
Mechanical Fabric Co., Providence, R. I.

Carriage Mats.

Continental Rubber Works, Erie, Pa.
Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
National India Rubber Co., Bristol, R. I.

RUBBER BUYERS' DIRECTORY—Continued.

Carriage Mats.—Continued.

N. J. Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston, Mass.
Voorhees Rubber Mfg. Co., Jersey City.

Cord (Pure Rubber).

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Davol Rubber Co., Providence, R. I.
Dayton Rubber Mfg. Co., Dayton, O.
Electric Hose & Rubber Co., Wilmington, Del.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Deckle Straps.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Mechanical Rubber Co., Chicago.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.

Door Springs.

Hodgman Rubber Co., New York.

Dredging Sleeves.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston, Mass.

Force Cups.

The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

Fruit Jar Rings.

Acme Rubber Mfg. Co., Trenton.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
Empire Rubber Mfg. Co., Trenton, N. J.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Manhattan Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
New York Belting & Packing Co., N. Y.

Fuller Balls.

Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., New York.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.

Gage Glass Washers.

Boston Belting Co., Boston, Mass.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
Electric Hose & Rubber Co., Wilmington, Del.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
Mechanical Rubber Co., Chicago, Ill.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.

Gage Glass Washers.—Continued.

Revere Rubber Co., Boston, Mass.
Jos. Stokes Rubber Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City, N. J.

Gas-Bags (Rubber).

Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
Peerless Rubber Mfg. Co., New York.
Tyer Rubber Co., Andover, Mass.
Voorhees Rubber Mfg. Co., Jersey City.

Gasket Tubing.

Boston Belting Co., Boston-New York.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Jenkins Bros., New York.
National India Rubber Co., Bristol, R. I.
New Jersey Car Spring & Rubber Co.
Revere Rubber Co., Boston.

Grain Drill Tubes.

Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Dayton Rubber Mfg. Co., Dayton, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.

Hat Bags.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Mattson Rubber Co.
Mechanical Rubber Co., Chicago.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston.

Horse Shoe Pads.

Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
Home Rubber Co., Trenton, N. J.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Hose—Wire Wound.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
Electric Hose & Rubber Co., Wilmington, Del.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Hose Core.

Alderfer Crate Co., Sharon Center, O.

Hose Pipes, Nozzles, Couplings and Fittings.

Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Eureka Fire Hose Co., New York.
Revere Rubber Co., Boston.
A. Schrader's Son, Inc., New York.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.

Hose Linings.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Empire Rubber Mfg. Co., Trenton, N. J.
Eureka Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston.

Hose Racks and Reels.

Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
New York Belting & Packing Co., N. Y.
Wirt & Knox Mfg. Co., Philadelphia.

Hose—Rubber Lined.

Cotton and Linen.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Gutta Percha & Rubber Mfg. Co., N. Y.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Empire Rubber Mfg. Co., Trenton, N. J.
Eureka Fire Hose Co., New York.
Fabric Fire Hose Co., New York.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston.
Jos. Stokes Rubber Co., Trenton, N. J.
Voorhees Rubber Mfg. Co., Jersey City.

Hose—Submarine.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Continental Rubber Works, Erie, Pa.
Electric Hose & Rubber Co., Wilmington, Del.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston.
A. Schrader's Son, Inc., New York.

Hose Bands, Straps & Menders.

Boston Woven Hose & Rubber Co.
William Yerdon, Fort Plain, N. Y.

Lawn-Hose Supporters.

C. J. Bailey & Co., Boston.

Lawn Sprinklers.

W. D. Allen Mfg. Co., Chicago.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.

Mallets (Rubber).

Boston Belting Co., Boston-New York.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Revere Rubber Co., Boston-New York.

Mould Work.

(See Mechanical Rubber Goods.)

H. O. Canfield Co., Bridgeport, Ct.
Continental Rubber Works, Erie, Pa.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Dayton Rubber Mfg. Co., Dayton, O.
Faultless Rubber Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Hodgman Rubber Co., New York.
La Crosse (Wis.) Rubber Mills Co.
Massachusetts Chemical Co., Walpole, Mass.
Mattson Rubber Co., New York.
Milford Rubber Works, Milford, Ill.
Mitzel Rubber Co., Akron, O.
Plymouth Rubber Co., Stoughton, Mass.
Tyer Rubber Co., Andover, Mass.
Western Rubber Works, Goshen, Ind.

Oil Well Supplies.

Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Lake Shore Rubber Co., Erie, Pa.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.

Oil Well Supplies.—Continued.

Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-Pittsburgh.
Voorhees Rubber Mfg. Co., Jersey City.

Packing.

(See Mechanical Rubber Goods.)

Alfred Calmon, Ltd., London.
Dayton Rubber Mfg. Co., Dayton, O.
Jenkins Bros., New York.
New Jersey Car Spring & Rubber Co.
Voorhees Rubber Mfg. Co., Jersey City.

Paper Machine Rollers.

Boston Belting Co., Boston-New York.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Plumbers' Supplies.

Canadian Rubber Co. of Montreal.
H. O. Canfield Co., Bridgeport, Ct.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Republic Rubber Co., Youngstown, O.
Western Rubber Works, Goshen, Ind.

Pump Valves.

(See Mechanical Rubber Goods.)

Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Jenkins Bros., New York.
New York Belting & Packing Co., N. Y.
Revere Rubber Co., Boston, Mass.
Western Rubber Works, Goshen, Ind.

Rolls—Rubber Covered.

Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
Mechanical Rubber Co., Chicago.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.

Sewing Machine Rubbers.

Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.

Springs—Rubber.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Canadian Rubber Co. of Montreal.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Plymouth Rubber Co., Stoughton, Mass.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

Stair Treads.

Acme Rubber Mfg. Co., Trenton.
Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co., of Montreal.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Empire Rubber Mfg. Co., Trenton, N. J.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston-New York.
Voorhees Rubber Mfg. Co., Jersey City.

RUBBER BUYERS' DIRECTORY—Continued.

Thread.
B. F. Goodrich Co., Akron, O.
Mechanical Fabric Co., Providence, R. I
Revere Rubber Co., Boston.

Tiling.
Canadian Rubber Co., of Montreal, Ltd.
Continental Rubber Works, Erie, Pa.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co., N. Y.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
N. J. Car Spring and Rubber Co., Jersey City.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Voorhees Rubber Mfg. Co., Jersey City.

Tubing.
(See Mechanical Rubber Goods.)
American Hard Rubber Co., New York.
Continental Rubber Works, Erie, Pa.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Dayton Rubber Mfg. Co., Dayton, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Plymouth Rubber Co., Stoughton, Mass.
New Jersey Car Spring & Rubber Co.
New York Belting & Packing Co., N. Y.
Tyer Rubber Co., Andover, Mass.

Valve Balls.
Boston Belting Co., Boston.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., New York.
Manhattan Rubber Mfg. Co., New York.
Mechanical Rubber Co., Chicago.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
New York Rubber Co., New York.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Revere Rubber Co., Boston.

Valve Discs.
American Hard Rubber Co., New York.
Boston Belting Co., Boston-New York.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
Jenkins Bros., New York.
New York Belting & Packing Co., N. Y.
Peerless Rubber Mfg. Co., New York.
Republic Rubber Co., Youngstown, O.
Western Rubber Works, Goshen, Ind.

Valves.
(See Mechanical Rubber Goods.)
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Jenkins Bros., New York-Chicago.
Milford Rubber Works Co., Milford, Ill.
New Jersey Car Spring & Rubber Co.
New York Belting & Packing Co., N. Y.

Vulcanite Emery Wheels.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., Ltd., New York.

Wringer Rolls.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Continental Rubber Works, Erie, Pa.
Dayton Rubber Mfg. Co., Dayton, O.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Home Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Republic Rubber Co., Youngstown, O.

DRUGGISTS' AND STATIONERS' SUNDRIES.

Atomizers.
Bandages.
Bulbs.
Syringes.
Water Bottles.

Druggists' Sundries—General.
Allen Mfg. Co., Toledo, Ohio.
American Hard Rubber Co., New York.
C. J. Bailey & Co., Boston.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Canton Rubber Co., Canton, O.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Hygeia Nursing Bottle Co., Buffalo, N. Y.
Imperial Rubber Mfg. Co., Beach City, O.
Luzerne Rubber Co., Trenton, N. J.
Mitsel Rubber Co., Akron, O.
National India Rubber Co., Bristol, R. I.
North British Rubber Co., Ltd., Edinburgh.
Pirelli & Co., Milan, Italy.
Seamless Rubber Co., New Haven, Ct.
Tyer Rubber Co., Andover, Mass.

Balls, Dolls and Toys.
New York Rubber Co., New York.

Combs.
American Hard Rubber Co., New York.

Elastic Bands.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York-Boston.
Tyer Rubber Co., Andover, Mass.

Erasive Rubbers.
Davidson Rubber Co., Boston.
B. F. Goodrich Co., Akron, O.
Mattson Rubber Co., New York.

Finger Cots.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Faultless Rubber Mfg. Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Imperial Rubber Mfg. Co., Beach City, O.
The Rubber Products Co., Barberton, O.

Gloves.
Canadian Rubber Co. of Montreal.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Imperial Rubber Mfg. Co., Beach City, O.
National India Rubber Co., Bristol, R. I.
Rubber Products Co., Barberton, O.

Hard Rubber Goods.
American Hard Rubber Co., New York.
Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
H. O. Canfield Co., Bridgeport, Ct.
Davol Rubber Co., Providence, R. I.
Household Rubber Co., Youngstown, O.
Luzerne Rubber Co., Trenton, N. J.
Stokes Rubber Co., Joseph, Trenton, N. J.
Tyer Rubber Co., Andover, Mass.

Hospital Sheetings.
Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.
Plymouth Rubber Co., Stoughton, Mass.
Tyer Rubber Co., Andover, Mass.

Ice Bags and Ice Caps.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Imperial Rubber Mfg. Co., Beach City, O.
National India Rubber Co., Bristol, R. I.
The Rubber Products Co., Barberton, O.
Tyer Rubber Co., Andover, Mass.

Life Preservers.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

Nipples.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hygeia Nursing Bottle Co., Buffalo, N. Y.
Imperial Rubber Mfg. Co., Beach City, O.
The Rubber Products Co., Barberton, O.
Tyer Rubber Co., Andover, Mass.

Portable Bath Outfits.
Allen Mfg. Co., Toledo, Ohio.

Shower Bath Sprinklers.
A. Schrader's Son, Inc., New York.

Sponges (Rubber).
Geo. Borgfeldt & Co., New York.
Faultless Rubber Co., Ashland, O.
N. Tire Rubber Sponge Co., Chicago.

Stationers' Sundries.
American Hard Rubber Co., New York.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York-Boston.
Seamless Rubber Co., New Haven, Ct.
Tyer Rubber Co., Andover, Mass.

Stopples (Rubber).
Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., New York.
Manhattan Rubber Mfg. Co., New York.
National India Rubber Co., Bristol, R. I.
New York Belting & Packing Co., N. Y.
A. Schrader's Sons, Inc., New York.
Tyer Rubber Co., Andover, Mass.

Throat Bags.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich, Akron, O.
National India Rubber Co., Bristol, R. I.
Tyer Rubber Co., Andover, Mass.

Tobacco Pouches.
Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
The Rubber Products Co., Barberton, O.
Tyer Rubber Co., Andover, Mass.

MACKINTOSHED AND SURFACE GOODS.

Air Cushions.
Metropolitan Air Goods Co., Reading, Mass.

Air Goods (Rubber).
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Metropolitan Air Goods Co., Reading, Mass.
New York Rubber Co., New York.
National India Rubber Co., Providence.
Tyer Rubber Co., Andover, Mass.

Air Mattresses.
Canadian Rubber Co. of Montreal.
Metropolitan Air Goods Co., Reading, Mass.
Mechanical Fabric Co., Providence, R. I.
National India Rubber Co., Bristol, R. I.

Barbers' Bibs.
Cleveland Rubber Co., Cleveland, O.
Davol Rubber Co., Providence, R. I.
Tyer Rubber Co., Andover, Mass.

Bathing Caps.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.

Bellows Cloths.
Boston Rubber Co., Boston.
Cleveland Rubber Co., Cleveland, O.
Hodgman Rubber Co., New York.
La Crosse (Wis.) Rubber Mills Co.

Calendering.
La Crosse (Wis.) Rubber Mills Co.
Plymouth Rubber Co., Stoughton, Mass.

Carriage Ducks and Drills.
Cleveland Rubber Co., Cleveland, O.
Empire Rubber Mfg. Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Toronto.
National India Rubber Co., Bristol, R. I.

Clothing.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Hodgman Rubber Co., New York.
La Crosse (Wis.) Rubber Mills Co.
National India Rubber Co., Bristol, R. I.
North British Rubber Co., Ltd., Edinburgh.
Pirelli & Co., Milan, Italy.

Cravenette.
Cravenette Co., Ltd.

Diving Apparatus.
A. Schrader's Son, Inc., New York.
Hodgman Rubber Co., New York.

Dress Shields.
Mattson Rubber Co., New York.

Horse Covers.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

Leggings.
Cleveland Rubber Co., Cleveland, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

Mackintoshes.
(See Clothing.)

Proofing.
Canadian Rubber Co. of Montreal.
La Crosse (Wis.) Rubber Mills Co.
Plymouth Rubber Co., Stoughton, Mass.

Rain Coats.
Cravenette Co., Ltd.

Rubber Coated Cloths.
Mechanical Fabric Co., Providence, R. I.

RUBBER FOOTWEAR.

Boots and Shoes.
American Rubber Co., Boston.
Boston Rubber Shoe Co., Boston.
Canadian Rubber Co. of Montreal.
L. Candee & Co., New Haven, Ct.
B. F. Goodrich Co., Akron, O.
Gutta Percha & Rubber Mfg. Co. of Toronto.
Hood Rubber Co., Boston.
Lycoming Rubber Co., Williamsport, Pa.
Meyer Rubber Co., New York.
Milford Rubber Works Co., Milford, Ill.
National India Rubber Co., Boston.
North British Rubber Co., Ltd., Edinburgh.
United States Rubber Co., New York.
Wales-Goodyear Rubber Co., Boston.
Woonsocket Rubber Co., Providence.

Heels and Soles.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Continental Caoutchouc & Guttapercha Co., Hanover.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
Plymouth Rubber Co., Stoughton, Mass.
Western Rubber Works, Goshen, Ind.

Tennis Shoes.
American Rubber Co., Boston.
Boston Rubber Shoe Co., Boston.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.
La Crosse Rubber Mills Co., La Crosse, Wis.
National India Rubber Co., Providence.
United States Rubber Co., New York.

Wading Pants.
Canadian Rubber Co. of Montreal.
Hodgman Rubber Co., New York.

DENTAL AND STAMP RUBBER.

Dental Gum.
American Hard Rubber Co., New York.
Cleveland Rubber Co., Cleveland, O.
Tyer Rubber Co., Andover, Mass.

Rubber Dam.
Cleveland Rubber Co., Cleveland, O.
Davidson Rubber Co., Boston.
Davol Rubber Co., Providence, R. I.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Tyer Rubber Co., Andover, Mass.

Stamp Gum.
B. F. Goodrich Co., Akron, O.
Mattson Rubber Co., New York.
Mechanical Rubber Co., Chicago, Ill.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.

ELECTRICAL.

Electrical Supplies.
American Hard Rubber Co., New York.
Lake Shore Rubber Co., Erie, Pa.
Joseph Stokes Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Boston.
Tyer Rubber Co., Andover, Mass.

Friction Tape.
Boston Belting Co., Boston.
Boston Woven Hose & Rubber Co.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
B. F. Goodrich Co., Akron, O.
Home Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Boston.
Mechanical Rubber Co., Chicago.
National India Rubber Co., Bristol, R. I.
Revere Rubber Co., Boston-New York.

RUBBER BUYERS' DIRECTORY—Continued.

Hard Rubber Goods.
American Hard Rubber Co., New York.
Canadian Rubber Co. of Montreal.
Luzerne Rubber Co., Trenton, N. J.
Joseph Stokes Rubber Co., Trenton, N. J.

Insulating Compounds.
Canadian Rubber Co. of Montreal.
Gutta-Percha & Rubber Mfg. Co., Toronto.
Massachusetts Chemical Co., Boston.

Insulated Wire and Cables.
National India Rubber Co., Providence.

Splicing Compounds.
Home Rubber Co., Trenton, N. J.
Massachusetts Chemical Co., Walpole, Mass.

SPORTING GOODS.

Foot Balls.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
National India Rubber Co., Bristol, R. I.

Golf Balls.
Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
Davidson Rubber Co., Boston.
B. F. Goodrich Co., Akron, O.
The Gutta Percha & Rubber Mfg. Co., of Toronto, Ltd.

Sporting Goods.
Canadian Rubber Co. of Montreal.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Hodgman Rubber Co., New York.
Tyer Rubber Co., Andover, Mass.

Striking Bags.
Canadian Rubber Co. of Montreal.
Cleveland Rubber Co., Cleveland, O.
Faultless Rubber Co., Akron, O.
B. F. Goodrich Co., Akron, O.
Rubber Products Co., Barberton, O.

Submarine Outfits.
Hodgman Rubber Co., New York.

MISCELLANEOUS.

Boxes (Wood).
Henry H. Sheip & Co., Philadelphia.

Brass Fittings.
A. Schrader's Son, Inc., New York.

Buckles.
The Weld Mfg. Co., Boston.

Cement (Rubber).
Boston Belting Co., Boston.
Canadian Rubber Co. of Montreal.
B. F. Goodrich Co., Akron, O.
Hadley Cement Co., Lynn, Mass.
Manhattan Rubber Mfg. Co., New York.
N. J. Car Spring & Rubber Co., Jersey City, N. J.
New York Belting & Packing Co., N. Y.

Chemical and Mechanical Engineer.
Charles E. Farrington, Boston.

Chemists.
Stephen P. Sharples, Boston, Mass.

Consulting Engineer.
M. P. Fillingham, New York.

Recording Thermometers.
Bristol Co., New York.

Rubber Journals.
Gummi-Zeitung, Dresden, Germany.
L'Agriculture des Pays Chauds, France.

Rubber Tree Seeds.
J. P. William & Bros., Heneratgoda, Ceylon.
Paul Krumbholz, Momotombo, Nicaragua.

Scrap Metals.
Robert L. Crooke, New York.

Valves for Air Goods.
A. Schrader's Son, Inc., New York.

MACHINERY AND SUPPLIES FOR RUBBER MILLS.

RUBBER MACHINERY.

Acid Tanks.
Birmingham Iron Foundry, Derby, Conn.

Band Cutting Machines.
A. Adamson, Akron, O.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.

Belt Folding Machines.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Belt Slitters.
Cloth Dryers.
Gearing.
Shafting.

Wrapping Machines.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Belt Stretchers.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven.

Boilers.
William R. Thropp, Trenton, N. J.
John E. Thropp & Sons Co., Trenton, N. J.

Braiders.
New England Butt Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

Cabling Machinery.
Alton Machine Co., New York.

Calenders.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
David Bridge & Co., Castleton, Manchester, Eng.
Farrel Foundry & Mach. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.
Textile Machine Works, Reading, Pa.

Castings.
A. Adamson, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Chucks (Lathe).
Hoggson & Pettis Mfg. Co., New Haven.

Churns.
American Tool & Machine Co., Boston.

Clutches.
arrel Foundry & Mach. Co., Ansonia, Conn.

Crackers.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.

Devulcanizers.
Alton Machine Co., New York.
Biggs Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Edred W. Clark, Hartford, Conn.
William R. Thropp, Trenton, N. J.

Dies.
John J. Adams, Worcester, Mass.
Boston Die Co., Boston.
Hoggson & Pettis Mfg. Co., New Haven.

Doubling Machines.
American Tool & Machine Co., Boston.

Drying Apparatus.
American Process Co., New York.

Drying Machines.
Alton Machine Co., New York.
David Bridge & Co., Castleton, Manchester, Eng.
Joseph P. Devine, Buffalo, N. Y.
Birmingham Iron Foundry, Derby, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

Embossing Calenders.
Textile-Finishing Machinery Co., Providence, R. I.

Engines, Steam.
Alton Machine Co., New York.
William R. Thropp, Trenton, N. J.
John E. Thropp & Sons Co., Trenton, N. J.

Engraving Rolls.
Hoggson & Pettis Mfg. Co., New Haven.

Grinders and Mixers.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
William R. Thropp, Trenton, N. J.

Hangers.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Hose Machines.
A. Adamson, Akron, O.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.

Hydraulic Accumulators.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Insulating Machinery.
Textile Machine Works, Reading, Pa.

Iron Castings.
Alton Machine Co., New York.

Lasts (Rubber Shoe).
Middlesex Last Co., Boston.

Lathes—Hard Rubber.
A. Adamson, Akron, O.

Lathes—Jar Ring.
A. Adamson, Akron, O.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
William R. Thropp, Trenton, N. J.

Machinists' Tools.
Hoggson & Pettis Mfg. Co., New Haven.

Moulds.
A. Adamson, Akron, O.
Alton Machine Co., New York.
Barbour Bros., Trenton, N. J.
Birmingham Iron Foundry, Derby, Conn.
H. O. Canfield Co., Bridgeport, Conn.
Hoggson & Pettis Mfg. Co., New Haven.
Williams Foundry & Machine Co., Akron, Ohio.

Pillow Blocks.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Presses (for Rubber Work).
A. Adamson, Akron, O.
Alton Machine Co., New York.
Bay State Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Boomer & Boschert Press Co., Syracuse, N. Y.
Edred W. Clark, Hartford, Conn.
Farrel Foundry & Mach. Co., Ansonia, Conn.
William R. Perrin & Co., Chicago Ill.
William R. Thropp, Trenton, N. J.
Williams Foundry & Machine Co., Akron, Ohio.

Pumps.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Boomer & Boschert Press Co., Syracuse.
Farrel Foundry & Mach. Co., Ansonia, Conn.

Racks for Boot and Shoe Cars.
Hoggson & Pettis Mfg. Co., New Haven

Reducing Valves.
Mason Regulator Co., Boston.

Rollers (Hand).
Hoggson & Pettis Mfg. Co., New Haven

Rubber Covering Machines.
Alton Machine Co., New York.
New England Butt Co., Providence, R. I.

Separators.
Turner, Vaughan & Taylor Co., Cuyahoga Falls, O.

Separators for Reclaimed Rubber.
American Process Co., New York.

Special Rubber Machinery.
Alton Machine Co., New York.
Wellman Co., Medford, Mass.

Spreaders.
Alton Machine Co., New York.
American Tool & Machine Co., Boston.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.

Steam Traps and Specialties.
Jenkins Bros., New York.
Mason Regulator Co., Boston.
Osgood Sayen, Philadelphia, Pa.

Steel Stamps.
Hoggson & Pettis Mfg. Co., New Haven.

Stitchers (Hand).
Hoggson & Pettis Mfg. Co., New Haven.

Strip Covering Machines.

Strip Cutters.
Alton Machine Co., New York.
New England Butt Co., Providence, R. I

Tire Molds.
Bay State Machine Co., Erie, Pa.
Williams Foundry & Machine Co., Akron, O.

Tubing Machines.
A. Adamson, Akron, O.
Alton Machine Co., New York.
Bay State Machine Co., Erie, Pa.
Edred W. Clark, Hartford, Conn.
John Royle & Sons, Paterson, N. J.
Textile Machine Works, Reading, Pa.
Williams Foundry & Machine Co., Akron, Ohio.

Vacuum Drying Chambers.
Alton Machine Co., New York.
Joseph P. Devine Co., Buffalo, N. Y.
F. J. Stokes Machine Co., Philadelphia, Pa.

Varnishing Machines.
Birmingham Iron Foundry, Derby, Conn.

Vulcanizers.
Alton Machine Co., New York.
Biggs Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Mach. Co., Ansonia,
John E. Thropp's Sons Co., Trenton, N. J.
William R. Thropp, Trenton, N. J.

Washers.
Alton Machine Co., New York.
Birmingham Iron Foundry, Derby, Conn.
David Bridge & Co., Castleton, Manchester, Eng.
Continental Rubber Works, Erie, Pa.
Farrel Foundry & Mach. Co., Ansonia, Conn.
William R. Thropp, Trenton, N. J.
Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Wire Insulating Machines.
Alton Machine Co., New York.
New England Butt Co., Providence, R. I.

Wire Rope Machinery.
Alton Machine Co., New York.

SECOND-HAND MACHINERY.

Philip McGrory, Trenton, N. J.
M. Norton & Co., Charlestown, Mass.

FACTORY SUPPLIES.

Aluminum Flake.
Aluminum Flake Co., Akron, O.

Antimony, Sulphurets of.
Golden.
Actien-Ges. Georg Egestorff's Salzwerke Linden, Germany.
Atlas Chemical Co., Newtonville, Mass.
Golden and Crimson.
Joseph Cantor, New York.

MACHINERY AND SUPPLIES FOR RUBBER MILLS—Continued.

Antimony, Sulphurets of.—Continued.

Golden and Crimson.
Wm. H. Scheel, New York.
Stamford (Conn.) Rubber Supply Co.
Typke & King, London, England.

Balata.
George A. Alden & Co., Boston.
Raw Products Co., New York.

Benzol.
Samuel Cabot, Boston.

Black Hypo.
Joseph Cantor, New York.
William H. Scheel, New York.
Typke & King, London, England.

Carbon Bisulphide.
George W. Spealght, New York.

Chemicals.
Massachusetts Talc Co., Boston.
Oxford Tripoli Co., New York.
George W. Spealght, New York.
S. P. Wetherill Co., Philadelphia, Pa.

Colors.
Joseph Cantor, New York.
William H. Scheel, New York.
Typke & King, London, England.
S. P. Wetherill Co., Philadelphia, Pa.

Crude Rubber.
George A. Alden & Co., Boston.
A. W. Brunn & Co., New York.
Walter L. Gough & Co., New York.
Hagermeyer & Brunn, New York.
Adolph Hirsch & Co., New York.
Livesey & Co., Ltd., New York.
Raw Products Co., New York.
Rubber Trading Co., New York-Boston.

Dermatine.
The Dermatine Co., London.

Ducks and Drills (Cotton).
J. H. Lane & Co., New York.

Gilsonite.
William H. Scheel, New York.

Graphite Grease.
Jos. Dixon Crucible Co., Jersey City.

Guayule Rubber.
Continental Rubber Co.
Ed. Maurer, New York.

Gutta-Percha.
George A. Alden & Co., Boston.
Raw Products Co., New York.
Rubber Trading Co., New York-Boston.

Hydro-Carbon Products.
Geo. A. Alden & Co., Boston.
William H. Scheel, New York.
Raven Mining Co., Chicago.

Infusorial Earth.
Stamford (Conn.) Rubber Supply Co.

Kapak.
Raven Mining Co., Chicago.

Lampblack.
Samuel Cabot, Boston.

Lead—Blue.
Lead—Sublimed White.
Picher Lead Co., Chicago, Ill.

Lithopone.
Gabriel & Schall, New York.

Mineral Rubber.
Geo. A. Alden & Co., Boston.

Paris White and Whiting.
H. P. Taintor Mfg. Co., New York.

Reclaimed Rubber.
Aladdin Rubber Co., Akron, O.
Alkali Rubber Co., Akron, O.

Reclaimed Rubber—Continued.
F. H. Appleton & Son, Boston.
Bloomingdale (N. J.) Soft Rubber Co.
E. H. Clapp Rubber Co., Boston, Mass.
Danversport Rubber Co., Boston.
Derby Rubber Co., Derby, Conn.
Eastern Rubber Co., New York.
John Lang, London.
Manufactured Rubber Co.
New Jersey Rubber Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works, Philadelphia.
Rickaby Rubber Mfg. Co., South Framingham, Mass.
Robinson & Stiles, New York.
Stockton Rubber Co., Stockton, N. J.
Jos. Stokes Rubber Co., Trenton, N. J.
S. & L. Rubber Co., Chester, Pa.
Trenton (N. J.) Rubber Reclaiming Works.
U. S. Rubber Reclaiming Works, N. Y.
Westmoreland Rubber Mfg. Co., Grapeville, Pa.

Agents and Dealers.
Philip McGrory, Trenton, N. J.
H. P. Moorhouse, Paris, France.
Rubber Trading Co., New York-Boston.
Wm. Somerville's Sons, Liverpool.

Scrap Rubber.
L. Albert & Son, Trenton, N. J.
Bers & Co., Philadelphia.
M. Berzen & Co., New York.
Wm. H. Cummings & Sons, New York.
Green & Shonberg, New York.
Theodore Hofeller & Co., Buffalo, N. Y.
A. W. Leslie & Co., Ltd., London, Eng.
B. Loewenthal & Co., New York and Chicago.
J. Loewenthal & Sons, Chicago.
Philip McGrory, Trenton, N. J.
Meyer Bros., Philadelphia, Pa.
Albert A. Moers, New York.
M. Norton & Co., Charlestown, Mass.
E. Parser & Brodsky, Antwerp.

Scrap Rubber.—Continued.
J. Schnurmann, London.
Schwab & Co., Philadelphia.
Trenton Gutta Percha & Rubber Separating Co., Trenton, N. J.
Trenton Scrap Rubber Supply Co., Trenton, N. J.
United States Waste Rubber Co., Brockton, Mass.
M. J. Wolpert, Odessa, Russia.

Substitute.
T. C. Ashley, Boston.
Joseph Cantor, New York.
Carter, Bell Mfg. Co., New York.
Massachusetts Chemical Co., Boston.
The Rubber Chemical Co., Birmingham, England.
C. P. Dos Santos, New York.
Wm. H. Scheel, New York.
Stamford (Conn.) Rubber Supply Co.
Typke & King, London, England.

Sulphur.
Battelle & Renwick, New York.
T. & S. C. White Co., New York.

Sulphur Chloride.
William H. Scheel, New York.
George W. Spealght, New York.
Stamford (Conn.) Rubber Supply Co.

Tapping Tools.
G. Van den Kerckhove, Brussels, Belgium.

Whiting.
H. P. Taintor Mfg. Co., New York.

Zinc Substitute.
Aluminum Flake Co., Akron, O.

Zinc Sulphide.
Joseph Cantor, New York.
Typke & King, London, England.

Zinc White.
New Jersey Zinc Co., New York.

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National India Rubber Co., Bristol, R. I.

Insulated Wires.
National India Rubber Co., Bristol, R. I.

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Boston Belting Co., Boston-New York.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
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Revere Rubber Co., Boston, Mass.

Repair Stock.
Trenton Rubber Mfg. Co., Trenton, N. J.

Rims, Wheel.
Goodrich Co., B. F., Akron, Ohio.

Tires.
Bailey & Co., C. J., Boston, Mass.
Canadian Rubber Co., of Montreal, Ltd.
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Continental Rubber Works, Erie, Pa.
Dunlop Tire & Rubber Goods Co., Toronto.
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Lake Shore Rubber Co., Erie, Pa.
Milford Rubber Works, Milford, Ill.
North British Rubber Co., Ltd., Edinburgh, Scotland.
Pirelli & Co., Milan, Italy.
Plymouth Rubber Co., Stoughton, Mass.

Tires.—Continued.
Republic Rubber Co., Youngstown, Ohio.
Trenton Rubber Mfg. Co., Trenton, N. J.

Automobile and Carriage.
Acme Rubber Mfg. Co., Trenton, N. J.
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Lane & Co., J. H., New York.

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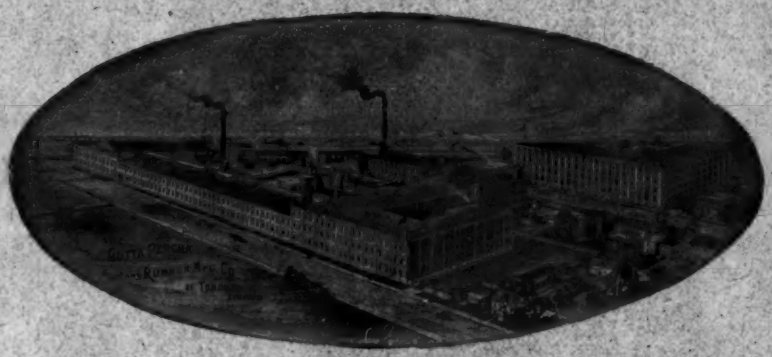

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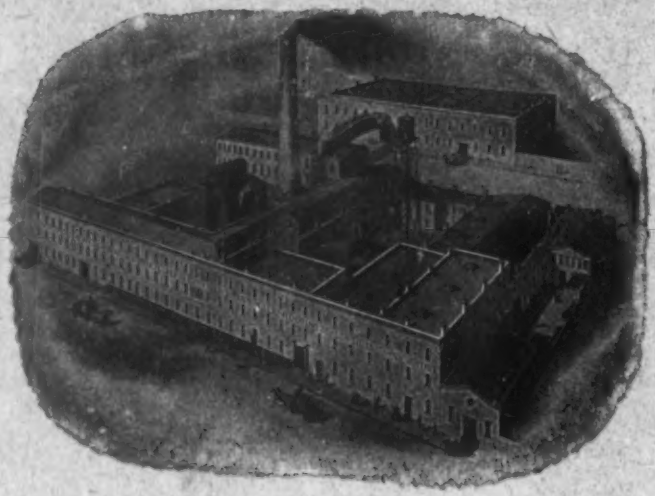

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